SYNOPSIS OF THE THESIS TITLED

A COMPREHENSIVE STUDY OF WORKING CAPITAL MANAGEMENT IN SELECTED FOUR-WHEELER AUTOMOBILE COMPANIES IN INDIA

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RESEARCH SCHOLAR

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RESEARCH GUIDE

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1. INTRODUCTION

Working capital management usually involves the administration of current assets, namely cash and marketing, Receivable and Inventories.

Howard and Upton

The capital required to operate a business is known as working capital. The problem of managing working capital has got a separate entity. Working capital, in general practice, refers to the excess of current assets over current liabilities. Therefore, working capital management is concerned with the problems in managing existing assets, current liabilities and the inter-relationship between them. Since working capital management decision is an important factor as it determines the firm values maximization and shareholder's wealth, many research studies have examined the relationship between working capital management and a firm's performance over the last decades. Working capital may be regarded as moving capital and represented by the excess of current assets over current liabilities and identifies the relatively liquid portion of any business unit **[Horngren et al., 2002].** The portion of current assets not supplied by current and short-term creditors in an organisation is termed working capital **[Brigham & Houston, 2009].** Many more definitions are also present for working capital; however, in simple words, it may be considered as funds required for carrying out routine business operations smoothly.

The first and foremost formal study conducted on working capital management in India in 1966 was by the National Council of Applied Economic Research **(NCAER)**. Two reports were promulgated by NCAER on the structure of working capital and described the composition of working capital based on analysis done on three (Sugar, fertilizers and Cement) industries. The primary consideration of such research was to explore to what extent these three industries were influenced and controlled by the components of working capital. Management of working capital is a crucial task for every industry, especially for manufacturing concerns, because half of the capital of these concerns is used as working capital [**Deloof, 2003]**. Various research studies on this subject have contended that ineffective management of working capital reduces the firm's profitability and may also cause industrial sickness; therefore, firms should maintain an optimum level of working capital to maximise their value **[Sonto, 2013]**. A very fundamental but important concept that a manager should keep in mind is that the lesser

the time a company needs to realised cash from its customers; the better it is for the liquidity position of the company and reduces the risk of dependency on external sources of finance to meet their short-term obligations **[Eckerby & Hoijer, 2009]**. This study attempts to determine the relationship between working capital management and profitability and measure the impact of working capital management on profitability. Working Capital may be classified based on the following parameters: Concept-based working capital and Time-based working capital

2. BACKGROUND OF WORKING CAPITAL

Capital is what makes or breaks a manufacturing company, and no enterprise can run smoothly without enough capital to cover both the short-term as well as long-term needs of a business **[Keowan et al., 2004].** One efficient but often overlooked way of doing so is to reduce the amount of capital tied up in various operations; that is, to improve the working capital management of the firm **[Eckerby & Hoijer, 2009].** The main objective of financial decision-making in all organisations is to maximise the shareholders' wealth. To achieve such an objective, it is necessary to engender sufficient profits, depending on the sales amounts. But sales cannot be converted into cash. That is why a need arises for working capital in the form of current assets to deal with the problem arising out of the deficiency of immediate transformation of cash against the goods sold **[Pandey, 2004].** Working capital is obligatory until a firm acquires cash on selling finished products. It depends on two factors: the manufacturing cycle and credit policy.

2.1 Concept-Based Working Capital

(a) Gross Working Capital: It pertains to the firm speculating total current or circulating assets [**Gallagher & Joseph, 2000]**. **(b) Net Working Capital has been defined in two** ways: **(i).** The most commonly accepted definition of Net Working Capital is the excess of current assets over current liabilities. However, some individuals define it as simply the deviance between current assets and current liabilities. **[Gallagher & Joseph, 2000**]. (**ii).** That portion of an organisation's current assets is supported by long-term funds **[Hill, 2009**] and **(iii).** Negative Working Capital: An indicator of trouble for an organisation occurs when the current liabilities exceed the current assets **[Gupta, 2009].**

2.1 Time-Based Working Capital

(a) Permanent Working Capital: The minimum amount of working capital is always required to be kept in business to run at a minimum level. It is because a minimum level of current assets is required continuingly throughout the year **[Keowan et al., 2004].**

(b) Temporary Working Capital: Depending on the needs of business activities, the level of such working capital changes from time to time. In times of increased business activities, it serves additional current assets, or vice-versa. For example, extra inventories will be needed during increased production activities or vice-versa **[Michael & Brigham, 2010].**

A company's working capital is equivalent to the amount of cash it can deploy rapidly. All kinds of business organisations can have working capital problems. Working capital problems arise due to long-dated payments from clients. There was a time when banks gladly provided help to businesses in cases of need through short-term cash flow with a loan or overdraft extension. But the scenario has changed, and getting access to bank finance has become much tougher. Even if banks provide such facilities, it can take weeks to sort out, and they must provide a personal guarantee. That is why the need arises to find appropriate sources of funds **[Smith, 1974]**. There are various sources that a business can consider to finance working capital, from short-term loans through financial institutions and Credit from suppliers to long-term bank loans **[Michael, 1976].** Short-term loans are such that a business has to pay off within a year of being borrowed. Bank overdrafts are also a type of short-term loan. Still, due to their inefficiency, banks have become increasingly reluctant to extend overdrafts to businesses, especially for small and medium enterprises. Business owners may also look to get a line of Credit from commercial banks. This loan agreement allows the borrowers to acquire part of the funds whenever needed, and there is no need to take out the entire loan **[Sonto, 2013].** Advances from customers against their orders are also one of the cheapest sources of short-term finance. Still, it is possible only if a company's demand for goods or services is higher and no substitute is available in the market. Nowadays, factoring has also become a popular way of accomplishing short-term needs for working capital **[Aggarwal, 2010].**

On the other hand, long-term sources of finance are normally secured against assets, and a business must have a strong and long credit history to be considered for such loans. Such a type of finance can be sought from commercial banks, owner's capital,

internal sources, public deposits, as well as through government and financial institutions. Another source of working capital is trade credit, depending on the nature of a business and the arrangements made with suppliers. Generally, most suppliers offer trade credit for expanding their business and allow customers to take stock of goods and pay for them later. A similar source of financing working capital is inventory financing. As the name suggests, this loan requires a business inventory to act as security **[Gracia & Solano, 2007].** So, the financial institution will extend money to a business and hold on to the inventory until the loan has been repaid. Depending upon the nature of business, an organisation may choose any source of finance according to its needs.

3. REVIEW OF LITERATURE AND RESEARCH GAP

3.1 Review of Literature

This chapter reviews the literature on the subject of the research. The reviews were compiled from many studies conducted by academics, practitioners and researchers. The total number of articles reviewed for the study is 195 from various publications in reputed journals and research thesis, which includes 100 foreign studies and 95 Indian studies. A review of these analyses is important to develop an approach that can be employed aimed at identifying and defining the research gap. Therefore, the present chapter reviews the various approaches to studying working capital management in selected four-wheeler automobile companies in India. The researcher has carried out a systematic review of earlier studies related to the area of research and Review of Literature divided into the following heading: (i) Literature on working capital general, (ii) Literature on working capital management policies, (iii)Literature into components of working capital and (iv) Literature on factors influencing the efficiency of working capital management. Some of the important studies related to the research topic are represented in table 1.1.

Table 1.1
Review of Literature

Sr. No	Authors	Information	Year
1	Zaman, M.,	Working Capital Management Practices of Public Sector Jute Enterprises.	1991
2	Hossain, Saiyed Zabid, and Akon, Md. Habibur Rahman	Financing of Working Capital: Case Study of Bangladesh Textile Mills Corporation.	1997

3	Shin H. and L. Soenen	The efficiency of Working Capital and Corporate Profitability.	1998
4	Deloof, Marc.	Does Working Capital Management Affect the Profitability of Belgian Firms?	2003
5	Lazaridis, I., & Tryfonidis, D.	Relationship between working capital management and profitability of listed companies in the Athens stock exchange.	2006
6	Mathuva, D.M	Influence of Working Capital Management Components on Corporate Profitability.	2010
7	Akino Olayinka Olufisayo	Determinants of Working Capital Requirement in Selected Quoted Companies in Nigeria.	2012
8	Bei Zhao and Wijewardena W. P	Working Capital Policy Practice: Evidence from Sri Lankan Companies.	2012
9	Nakamura Palombini Nathalle Vicente and Nakamura Wilson Toshiro	Key Factors in Working Capital Management in the Brazilian Market	2012
10	Tsuruta, Daisuke	Do Working Capital Strategies Matter? Evidence from Small Business Data in Japan.	2018
11	NCAER	Structure of Working Capital.	1966
12	Lambrix, R.L. and Singhvi, S.S.	Managing the Working Capital Cycle.	1979
13	Azhagaiah and Murlidharan	Trends in Working Capital Management and its Impact on Firms‟ Performance: An Analysis of Mauritian Small Manufacturing Firms.	2006
14	Bhunia, A.	Liquidity Management of Public Sector Iron and Steel Enterprise in India.	2007
15	Ramadu Janaki P. and Parasuraman N. R.,	Growth in Sales Compared with Changes in Profitability and Working Capital- A Case Study of Indian Pharmaceutical Industry.	2012
16	S.S. Saravanan, & J. Abarna	A Study on Liquidity Analysis of Selected Automobile Companies in India.	2014
17	Weinraub HJ and S Visscher	Industry Practice Relating to Aggressive Conservative Working Capital Policies	1998
18	Laitinen Ekkki K. and Laitinen Teija	Cash Management Behavior and Failure Prediction.	1998
19	Milan Shehzad L. and Smith Clifford w	Accounts Receivable Management Policy: Theory and Evidence.	1992
20	Banday, Shabir Hassan; (1996)	Inventory Management in Indian Industry (A Study of Maruti Udyog Limited).	1996
21	Nazir, M. S., & Afza, T	On The Factor Determining Working Capital Requirements.	2008
22	Amarjit Gill	Factors that influence working capital requirements in Canada	2011

3.2 Research Gap

The literature review is essential to know the earlier studies based on the research gap identified. It is also essential to develop the research study's objectives and hypothesis. From the above literature review, A few studies are found in the automobile industry. Still, they were considered the whole automobile industry or all the sectors like four-wheelers, two-wheelers, and three-wheelers. It is clear that no studies have been undertaken in the area of a comprehensive study of working capital management in four-wheeler companies in India. There is a need to study working capital management and its components in four-wheeler passenger car manufacturing companies. Hence, the study is designed to bridge this research gap. The study emphasises comprehensive approaches that are included in the study to assess the size, composition, circulation, growth, and source of working capital; the pattern of working capital; a trend of working capital; the relationship between sales and working capital; liquidity position; the impact of working capital ratio on profitability; and demand for working capital, in the selected four-wheeler automobile companies in India. Hence A comprehensive study of working capital management in selected four-wheeler automobile companies in India was undertaken for the study.

4. MEASUREMENT OF VARIABLES

A key variable was identified and defined after a detailed literature review. The set of the dependent, independent and control variables used in the study is the same for the individual companies and the industry to determine if the companies and the industry are influenced similarly or not. Based on the literature review of these aspects, various explanatory and control variables have been included in the study, and it is listed below in table 1.2

5. STATEMENT OF THE RESEARCH PROBLEM

The most important factor considered for the overall growth and development of the companies and Industries is the availability of working capital. Meeting the operational needs of the companies and industry does not appear to modify the subject of efficient working capital management. The key driver for the growth of the automobile and other manufacturing industries is working capital management. Working capital management brings results in increasing profits and expansion to the companies.

Table 1.2
Description of Variables

Variables	Definition	Measurement
CA	Current Asset	The business plans to convert all assets to cash within a year are considered current assets.
CL	Current liabilities	The debts or obligations of a firm due to being paid to creditors within one year are known as current liabilities.
NWC	Net working capital	Net working capital (NWC) is the difference between a business's short-term assets and short-term debts and liabilities.
GWC	Gross working capital	Gross working capital is the sum of a company's current assets (assets that are convertible to cash within a year or less).
TR	Trend ratio	The comparison of the successive values of each ratio for a single firm over a number of years.
CR	Current ratio	The current ratio is a liquidity ratio that measures a company's ability to pay short-term obligations or those due within one year.
QR	Quick ratio	The quick ratio measures a company's capacity to pay its current liabilities without needing to sell its inventory or obtain additional financing.
LR	Liquidity ratio	A liquidity ratio determines a company's ability to pay its short-term debt obligations.
CPR	Cash position ratio	The cash Position Ratio is the ratio of financial assets and current liabilities.
WCTR	Working capital turnover ratio	The ratio between a business's net revenue or turnover and its working capital.
ITR	Inventory turnover ratio	Inventory turnover is a financial ratio showing how many times a company has sold and replaced inventory during a given period.
RTR	Receivable turnover ratio	The accounts receivable turnover ratio measures the number of times over a given period that a company collects its average accounts receivable accounts.
CTR	Cash turnover ratio	The cash turnover ratio is an efficiency ratio that reveals the number of times cash is turned over in an accounting period.
PBT	Profit before tax	Earnings before interest and taxes (EBIT) indicate a company's profitability.
TAR	Total assets turnover ratio	he asset turnover ratio, also known as the total asset turnover ratio, measures the efficiency with which a company uses its assets to produce sales.
S_t	Sales	Sales are a company's proceeds from selling goods or services to its customers.
S_{t-1}	Change in the Sales	A change in sales means an increase or decrease in sales compared to the previous year.
RC	Real cash	Real cash flow expresses a company's cash flow with adjustments for inflation.
RI	Real inventory	Parts and raw materials that a company either uses in production or sells.
RR	Real receivable	The account balance is due from the debtor in one year or less. If a company has receivables, it has made a sale on credit but has yet to collect the money from the purchaser. Essentially, the company has accepted a short-term IOU from its client.
TA	Total assets	Total assets are the sum of a company's current and noncurrent assets.
FA	Fixed assets	Fixed assets are long-term assets that a company has purchased and uses to produce its goods and services.
TS	Total sales	Total sales or gross sales is the total of all sales revenues a business generates from normal activities.
TCA	Total current assets	Total Current assets are the sum of all current assets.

LTS	Long-term sources	Long-term finance can be defined as any financial instrument with a maturity exceeding one year.
STS	Short-term sources	Short-term finance refers to financing needs for a small period, normally less than a year.
ATR	Assets turnover ratio	The asset turnover ratio, also known as the total asset turnover ratio, measures the efficiency with which a company uses its assets to produce sales.
size	Size	Size is taken as a Natural logarithm of total assets or capital.
GR	Growth	Growth is measured by year-on-year growth in sales.
Prof	Profitability	Profitability is measured as the ratio of PBDITA to Total Assets.
NB	Nature of business	The nature of the business affects the working capital requirements of the business.
SOP	Scale of operations	The need for working capital is in direct proportion with the operating cycle of a business in production
OC	Operating Cycle	An Operating Cycle (OC) refers to the days required for a business to receive inventory, sell the inventory, and collect cash from the sale.
SF	Seasonal factors	Seasonal factors also affect working capital decisions in an organization. In case of seasonal fluctuations in sales, production will fluctuate accordingly, and ultimately requirement of working capital will also fluctuate (Conceptual framework of working capital management).
PC	Production Cycle	A production cycle is the production process that begins with the raw materials and ends with the finished product.
CA	Credit Allowed	If you are allowed credit, you are allowed to pay for goods or services several weeks or months after you have received them.
CAVLD	Credit Availed	A firm will need less working capital if liberal credit terms are available and vice-versa (Rani, 2013).
OE	Operating Efficiency	Operational efficiency is the relationship between an organization's output and input, which helps businesses cut unnecessary costs when healthy.
IM	Inventory Management	Inventory management helps companies identify which and how much stock to order at what time.
GP	Growth Prospects	When a company has higher growth prospects, the working capital requirement will be higher due to higher production and sales targets.
LOC	Level of competition	A high level of competition increases the need for more working capital. To face competition, more stock is required for quick delivery and credit.
Inflation	Inflation	Higher working capital requirements can mean additional borrowing and a higher interest expense, dragging profitability.
Liquidity	Liquidity	A firm with a greater liquidity ratio and better working capital management will achieve remarkable profitability on its investment.
AR	Account receivable	An account receivable management tool helps solve critical questions like when payment is due, how much payment is due, etc.
AP	Account Payable	Accounts payable is the amount a company must pay out over the short term and is a key component of working capital management.
DP	Dividend Policy	A firm's dividend policy is the most important factor in the working capital financing decision because retained earnings can finance the working capital requirement.
PE	Plant Efficiency	Efficient management of working capital ensures profitability and overall financial health for businesses.
TP	Taxation Policy	Tax policy & working capital Targeted cost reduction or cash management Programmes.

The subject of working capital management is of perennial and immense interest to academics and researchers. As there are controversies regarding certain concepts, no unanimous solution has been reached as yet. Working capital is undoubtedly one such topic. The puzzle of optimal working capital Management is as pertinent and crucial as working capital policies, which need to consider the nature of the company's business since different businesses have different working capital requirements **[Banjerjee, 2005].**

Further, In India today, some automobile manufacturing companies and industries are facing obsolescence, deterioration, pilferage, mishandling, high insurance and carrying costs, idle funds and accounts receivable due to unnecessary accumulation of inventories and cash. This study aims to determine whether there is excessive working capital. Also, some automobile industries in India face the problem of independence due to liquidity problems. This study also aims to find whether sufficient working capital is available to India's automobile manufacturing industry. Moreover, some four-wheeler companies in India are facing the problem of stagnation and a sluggish rate of return on investment. This study also aims to determine whether working capital is available to undertake profitable investments. Further, Four-wheeler manufacturing companies also have the problem of working capital if the sales performance is low. Less cash flow results in a lack of funds to make payments later, and the level of current assets will change quickly with the variation in sales. Also, delay in payment to vendors; will impact company cash flow, and the time lag will make it harder for the company to meet working capital requirements. Moreover, the study of four-wheeler automobile companies in India aims to determine whether there is excessive working capital. Also, some automobile industries in India face the problem of independence due to liquidity problems. This study also aims to find whether sufficient working capital is available to India's automobile manufacturing industry. So, this study helps know the company's working capital positions, fund maintenance, and set standards. Also, trend analysis can increase or decrease a fund's value.

As a result, the study gives insights into correctly strategizing financial decisions at the right time and place. Also, the study will enhance the existing working capital studies by including underexplored areas like current assets, current liabilities, receivables, inventories, and cash and their impact on operation and profitability. Furthermore, the study gives a sense of managing current assets and liabilities, the two main components

of working capital. Working capital management is critical for two reasons: (i) a large amount of the overall investment is put into current assets, and (ii) the level of current assets and current liabilities will fluctuate rapidly as sales change. Hence, this study attempts to analyse the size, composition, and circulation of working capital, trends, patterns, and liquidity, their impact on profitability and demand for working capital, and whether such an investment has increased or declined over time. And thus, provide directions for future research too. Against this backdrop, the study A Comprehensive Study of Working Capital Management in selected four-wheeler automobile companies in India assumes vital importance in the current Indian scenario.

6. NEED FOR THE STUDY

Based on earlier studies and statements of research problems, the following questions have arisen, necessitating the present research as part of working capital management in selected Four-wheeler automobile companies.

1. What is the size, composition, circulation, growth, and source of working capital management and its components? Is there any significant change taking place over a period of time?
2. Does the working capital trend of a company have an increase or decrease trend during the study periods?
3. What is the pattern of financing the working capital requirement?
4. What are the factors affecting the efficiency of working capital management?
5. Do the companies have ample cash available to pay current obligations? And is the liquidity position of companies improving in India?
6. What is the impact of working capital ratios on profitability in companies?
7. Does a transaction's demand for working capital and its various components vary proportionately to changes in sales volume?

The reasons above are enough to spawn research interest in analysing and interpreting working capital management. Hence the comprehensive study of working capital management in selected four-wheeler automobile companies in India is more important to find the answer to the abovementioned questions.

7. OBJECTIVE OF THE STUDY

The present study, in general, aims to comprehensively study working capital management in selected Four-wheeler automobile companies in India. To answer the study questions, a number of specific objectives have been outlined; fallows represent them.

1. To examine the size, composition, circulation, growth, and source of working capital management and its components.
2. To assess and analyse the working capital trends.
3. To identify and assess the factors affecting the efficiency of working capital management.
4. To study the pattern of working capital financing and assess the liquidity position.
5. To assess the impact of working capital ratios on profitability.
6. To study the transaction demand functions of working capital and its various components based on changes in sales volume proportionately.
7. To suggest policy measures based on the findings of the study to improve working capital management.

8. HYPOTHESIS OF THE STUDY

The following main hypotheses were developed based on the research questions for working capital management in selected Four-wheeler automobile companies:

1. H_1**:** There is a relationship between gross working capital and sales in selected Four-wheeler automobile companies.

2. H_1**:** There is a significant difference between the working capital trends of selected Four-wheeler automobile companies.

3. H_1: There is a significant association between the factors related to the nature of business and Scale of operations and the demographic factors of the respondents.

H_2**:** There is a significant association between the factors related to the operating cycle and seasonal factors, and the demographic factors of the respondents.

H_3: There is a significant association between the factors related to the production cycle and Credit allowed and the demographic factors of the respondents.

H_4: There is a significant association between the factors related to credit availability and operating efficiency and the demographic factors of the respondents.

H_5: There is a significant association between the factors related to inventory management and growth prospects and the demographic factors of the respondents.

H_6: There is a significant association between the factors related to the level of competition and inflation and the demographic factors of the respondents.

H_7: There is a significant association between the factors related to liquidity and account receivable and demographic factors of the respondents.

H_8: There is a significant association between the factors related to account payable and dividend policy and the demographic factors of the respondents.

H_9: There is a significant association between the factors related to plant efficiency and taxation policy and the demographic factors of the respondents.

H_{10}: There is a significant difference in the perception related to the efficiency of working capital between various categories of financial professions.
H_{11}: There is a significant impact of the financial professions on the efficiency of working capital and then on operating efficiency.

4. H_1: Pattern of working capital financing has influence (bearing) on working capital management.

H_2: There is a significant difference in the current ratios between selected Four-wheeler automobile companies and between years.

H_3: There is a significant difference in the quick ratios between selected Four-wheeler automobile companies and between years.

5. H_1: Working capital ratios have a significant impact on profitability ratios.
Sub-Hypothesis

H_1: Quick ratio has a significant impact on the profitability ratio.

H_2: The working capital turnover ratio has a significant impact on the profitability ratio.

H_3: The inventory turnover ratio has a significant impact on the profitability ratio.

H_4: Receivable turnover ratio has a significant impact on the profitability ratio.

H_5: The cash turnover ratio has a significant impact on the profitability ratio.

6. H_1: There is an effect Sales (S_{t-1}) on Demand Functions of Working Capital

H_2: There is an Effect of Sales (S_t) on Demand Functions of Working Capital

H_3: There is an effect of Sales (S_{t-1}) on-demand functions of working capital components.

H_4: There is an effect of Sales (S_t) on-demand functions of working capital components.

9. RESEARCH DESIGN AND METHODOLOGY

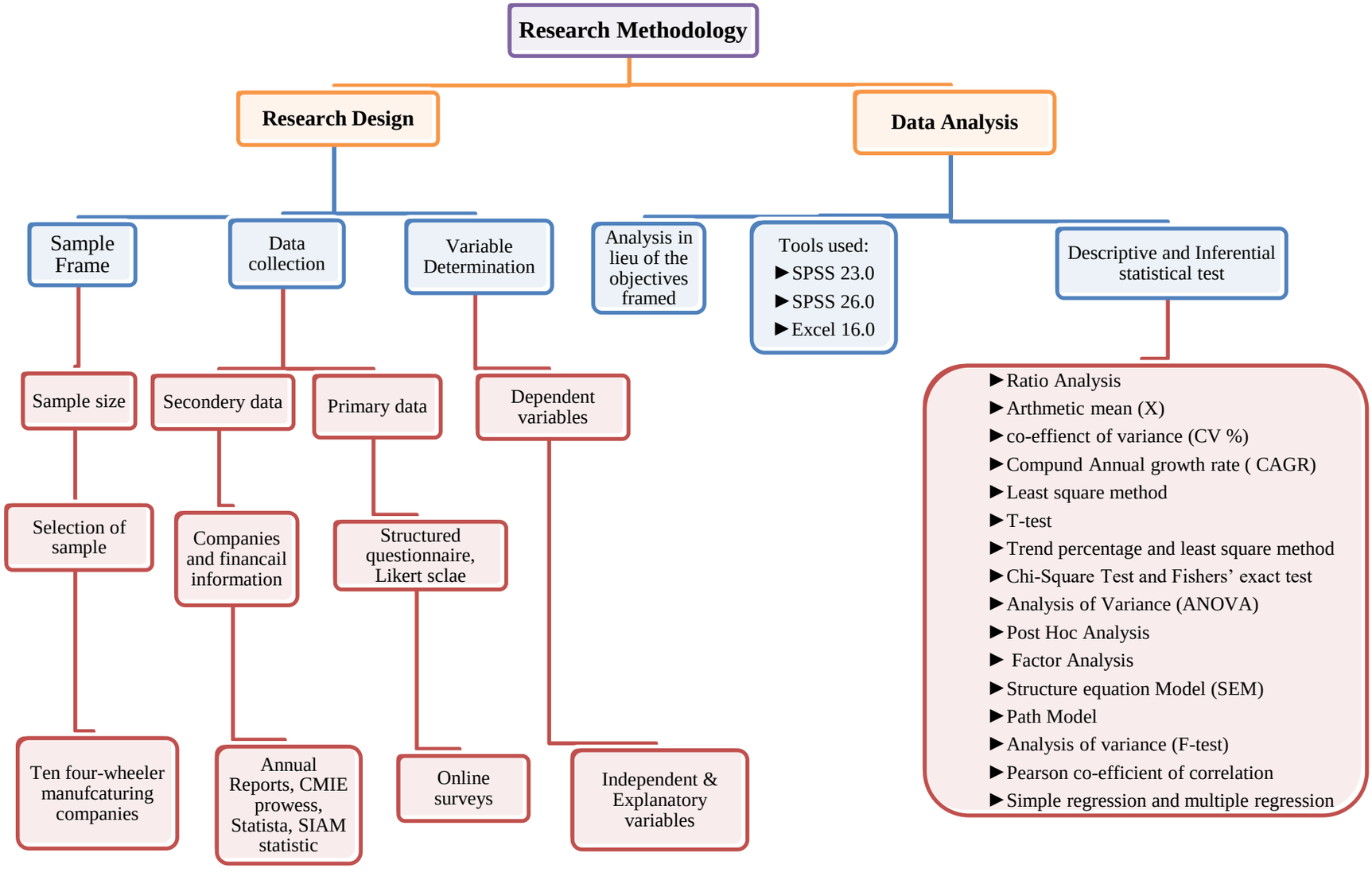
Figure 1.1 presents the research methodology of the present study. The study is based on both primary and secondary data. To choose a sample from the universe for research purposes., the purposive (judgmental) selection method is preferred for secondary data, and stratified sampling is used for primary data.

9.1 Sample Size

A. Secondary data: -

The companies in the automobile industry are classified into four-wheeler commercial vehicles, multiutility vehicles, and two and three-wheelers. There are 148 automotive manufacturing plants in various states of India per the Centre for Monitoring Indian Economy (CMIE) prowess database and Society of Indian Automobile Manufacturers (SIAM), which includes 78 commercial and passenger car plants and only passenger car automotive plants number 34. Four-wheeler manufacturing companies in total 48 include commercial vehicles number 20, passenger car manufacturing companies' number 21 and Diversified vehicles number 7 (source: CMIE prowess database). These automobile manufacturing companies belong to various segments like LCVS & HCVS, buses, passenger vehicles, two-wheelers, motorcycles, and mopeds, three-wheelers, as presented in Tables 1.4 and 1.5. However, in the context of the title and scope of the study, only selected four-wheeler companies in India working on or before 2011-12 are included as samples.

Figure 1.1
Research Methodology Framework



Source: Complied by the Researcher

B. Selection of Sample Companies: -

The comprehensive list of the Four-wheeler companies extracted from the database was modified, and finally, ten Four-wheeler companies were selected using the following criteria:

1. Ten Four-wheeler passenger car manufacturing companies were selected based on market share across India in the financial year 2021 **(Source: Statista).** These companies were also the leading Four-wheeler passenger car manufacturing brands in India and on other parameters of revenue making, like highest profit and sales.

2. The sample is truly representative of the automobile industry since these Ten Four-wheeler passenger car manufacturing companies curb most of the market share in their respective segments, as seen in tables 1.1 and 1.2.

3. Inactive Four-wheeler passenger car manufacturing companies were eliminated (dropped) from the study because they were not in operation for a specific year or during the study period.

4. Due to a lack of data for the study period, only active Four-wheeler passenger car manufacturing companies were considered.

5. The study considered selected Four-wheeler passenger car manufacturing companies with a minimum age of 10 years or more to comprehensively analyse their working capital management.

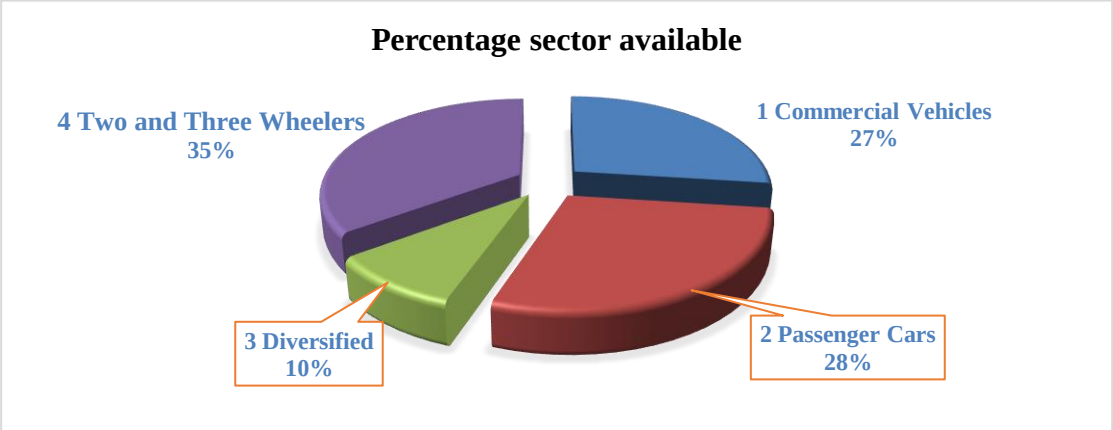
C. Sectors available in the Indian Automobile Industry as a percentage

Table 1.3
Percentage Sector Available

Sr. No	Sectors	Total Companies Available	Percentage Sector Available
1	Commercial Vehicles	20	27%
2	Four-wheeler passenger car	21	28%
3	Diversified	7	10%
4	Two and Three Wheelers	26	35%
	Total	74	100%

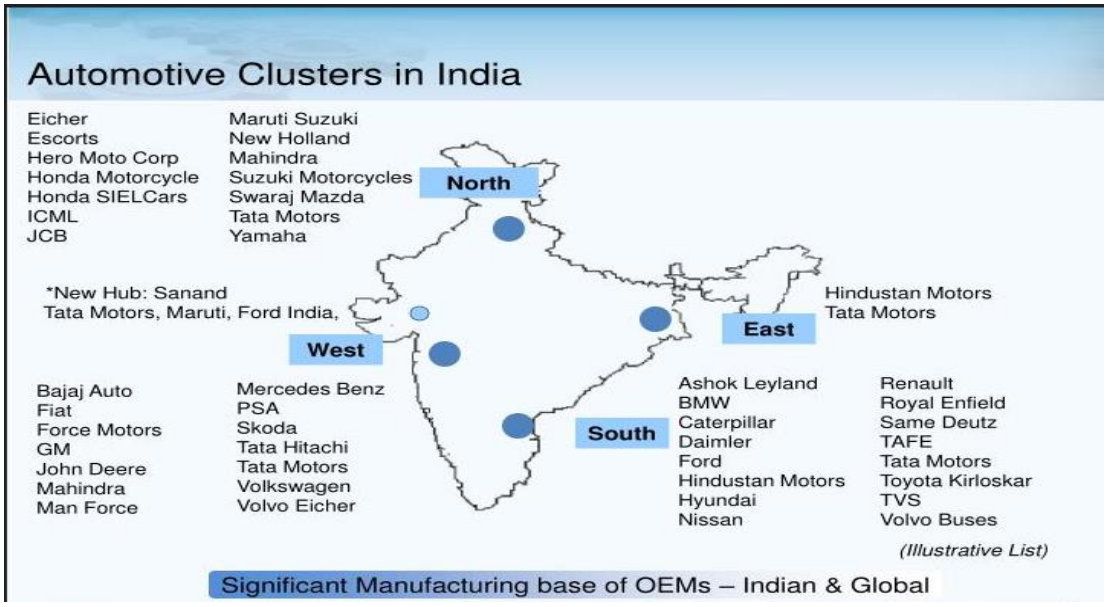
Source: CMIE prowess database

Chart 1.1



Further, as per the source: mapsofindia, it shows that Segmentation of market share of the automobile industry in India is Passenger Vehicle: 13 per cent, Commercial Vehicle: 3 per cent, Three-wheelers: 3 per cent, Two-wheelers: 81 per cent. Further Production**,** the industry produced 22,933,230 vehicles, including Passenger Vehicles, Commercial Vehicles, Three Wheelers, Two Wheelers, and Quadricycles from April 2021 to March 2022, as against 22,655,609 units from April 2020 to March 2021. Domestic Sales**,** Total Passenger Vehicle Sales increased from 2,711,457 to 3,069,499 units. Exports**,** From April 2021 to March 2022, Passenger Vehicle Exports increased from 404,397 to 577,875 units. (Source: SAIM- Society of Indian Automobile Manufacturer, Performance of Auto Industry in 2021-22).

Chart 1.2
Automotive Clusters in India



Source: ACMA- Automotive Component Manufacturers Association

All sectors (commercial vehicles, Four-wheeler passenger car manufacturing companies, diversified, two-and three-wheelers) were considered, but only Four-wheeler passenger car manufacturing companies were chosen for the study. The selected sectors include 74 companies. Out of 74 companies, 20 are under commercial vehicles, with a percentage sector available of 27 per cent, 21 are under Four-wheeler passenger car manufacturing companies, with a percentage available of 28 per cent, seven are under diversified, with a percentage sector available of 10 percentage, and 26 are under two and three-wheeler sectors, with a sector percentage available of 35 percentage. However, out of 21 Four-wheeler passenger car manufacturing companies in the selected sectors, 10 Four-wheeler passenger car manufacturing companies are included in the sample, with a sector percentage of 28 per cent. The list of companies selected to be included in the present study, along with their year of incorporation and market share, is presented in Tables 1.1 to 1.3. It is evident from Table 1.1 that the sample company represents 28 per cent of the automobile sector. Thus, the findings based on the occurrence of such a representative sample may be presumed to be true representations of the automobile industry in the country.

D. Total number of companies sector-wise available in Indian Automobile Industry

Table 1.4
Total number of companies available in the Indian Automobile Industry

Sr. No	Commercial Vehicles	Four-wheeler passenger car manufacturing companies	Diversified	Two and Three Wheelers
1	Ashok Leyland Ltd.	B M W India Pvt. Ltd.	Amvian Automotive Pvt. Ltd.	Andhra Pradesh Scooters Ltd.
2	Ashok Leyland Vehicles Ltd. [Merged]	Daewoo Motors India Ltd.	Chirakkal Auto Motive Pvt. Ltd.	Ather Energy Pvt. Ltd.
3	Asia Motor Works Ltd.	Fiat India Automobiles Pvt. Ltd.	Eicher Polaris Pvt. Ltd.	Atul Auto Ltd.
4	Daimler India Commercial Vehicles Pvt. Ltd.	Ford India Pvt. Ltd.	Kia Motors India Pvt. Ltd.	Bajaj Auto Ltd.
5	Deccan Auto Ltd.	General Motors India Pvt. Ltd.	Mahindra & Mahindra Ltd.	D S K Motowheels Pvt. Ltd.
6	Defence Land Systems India Ltd. [Merged]	Honda Cars India Ltd.	Manas Automotive Systemes Ltd.	Eicher Motors Ltd.

7	Force Motors Ltd.	Hyundai Motor India Ltd.	Prestogem Vehicles Pvt. Ltd.	Global Automobiles Pvt. Ltd.
8	Mahindra Nissan Allwyn Ltd. [Merged]	International Cars & Motors Ltd.		Gujarat Narmada Auto Ltd.
9	Man Trucks India Pvt. Ltd.	M G Motor India Pvt. Ltd.		H-D Motor Co. India Pvt. Ltd.
10	Metalsa India Pvt. Ltd.	Maestro Motors Ltd.		Hero Electric Vehicles Pvt. Ltd.
11	Olectra Greentech Ltd.	Mahindra Electric Mobility Ltd.		Hero Motocorp Ltd.
12	Renault Nissan Automotive India Pvt. Ltd.	Mahindra Vehicle Mfrs. Ltd. [Merged] (Mahindra & Mahindra Ltd.)		Honda Motorcycle & Scooter India (Pvt.) Ltd.
13	S M L Isuzu Ltd.	Maruti Suzuki India Ltd.		India Kawasaki Motors Pvt. Ltd.
14	Scania Commercial Vehicles India Pvt. Ltd.	Mercedes-Benz India Pvt. Ltd.		India Yamaha Motor Pvt. Ltd.
15	Standard Motor Products of India Ltd.	Pal-Peugeot Ltd.		Kerala Automobiles Ltd.
16	Sutlej Motors Pvt. Ltd.	Skoda Auto India Pvt. Ltd.		L M L Ltd.
17	Tata Motors Ltd.	Skoda Auto Volkswagen India Pvt. Ltd.		M L R Auto Ltd.
18	Transport Solutions India Pvt. Ltd.	Suzuki Motor Gujarat Pvt. Ltd.		Monto Motors Ltd.
19	V E Commercial Vehicles Ltd.	Toyota Kirloskar Motor Pvt. Ltd.		Piaggio Vehicles Pvt. Ltd.
20	Volvo Buses India Pvt. Ltd.	Volvo Auto India Pvt. Ltd.		Scooters India Ltd.
21		Tata Motors Ltd.		Sooraj Automobiles Ltd.
22				Sunku Auto Ltd.
23				Suzuki Motorcycle India Pvt. Ltd.
24				T V S Motor Co. Ltd.
25				T V S-Suzuki Ltd. [Merged]
26				Triumph Motorcycles (India) Pvt. Ltd.
Total	**20**	**21**	**7**	**26**

Source: CMIE prowess database, 2021

E. List of sample Four-wheeler passenger car manufacturing companies included in the present study

Table 1.5
Four-wheeler Passenger car manufacturing companies in India

Sr. No	Name of Company	CMIE Prowess Company code	Incorporation Year	Market share across India in the financial year 2021	Sales Volume (In 1,000s)
1	Maruti Suzuki India Ltd.	140829	1981	47.8 %	1393.84
2	Hyundai Motor India Ltd.	96229	1996	17.42%	471.54
3	Tata Motors Ltd.	248093	1945	8.2%	222.01
4	Mahindra & Mahindra Ltd.	136444	1945	5.75%	155.54
5	Toyota Kirloskar Motor Pvt. Ltd.	252519	1997	3.44%	93.12
6	Renault India Pvt. Ltd.	409540	2005	3.41%	92.27
7	Honda Cars India Ltd.	94960	1995	3.03%	82.07
8	Ford India Pvt. Ltd.	74412	2000	1.77%	48.04
9	Nissan Motor India Pvt. Ltd.	377305	2005	0.7%	18.88
10	Fiat India Automobiles Pvt. Ltd.	72882	1997	0.24%	6.55

Source: CMIE prowess database & Statista 2021
Source: Statista (Sales volume of four-wheeler passenger car manufacturing companies across India for 2020-21).

9.2 SAMPLE DESIGN

A. Primary Data: -

This study used the quantitative research method because it allows for greater objectivity. After all, the research involved very few variables, and prescribed procedures ensured a reliable set of answers. The study employed a quantitative research design by incorporating structured questionnaires to collect data from the respondents. The research design used for this study also employed a descriptive research strategy, which significantly relies on a quantitative research design.

Table 1.6 shows the total population of financial professions of the Security Board of India (SEBI) and Institute of Chartered Accountants of India (ICAI), based on the certified financial profession and chartered accountants working full-time practice.

Table 1.6
Total population

Sr. No	Financial Professions	Total Number
1	Financial Analyst	779
2	Financial Advisor	1334
3	Financial Planner	1400
4	Financial Manager	366
5	Chartered Account	125000
	Total	1,28,879

Source: SEBI & ICAI

B. Define Population: -

Financial professions are those who know working capital and financial context at a corporate level. Here, primary data is used to fulfil only one objective: the efficiency of working capital management. To know the perception of the financial professions on the factors influencing working capital management in selected Four-wheeler passenger car manufacturing companies, financial analysts, financial advisors, financial planners, financial managers, and chartered accountants are considered respondents. Based on the SEBI and ICAI websites' data, the total number of certified financial professionals and chartered accountants working full time for the study was collected from the concerned sites. The population from which the sample was drawn and who served as participants in the study.

C. Sample Frame: -

It is a list of all those papulations who can be sampled by those with a background in certified finance degree at corporate level knowledge. The financial profession may include males and females. In this study, the researcher collected financial professions details from SEBI and ICAI websites and cross-verified them with the help of SEBI's list of data available.

D. Sample Size: -

The sample size means the number of units taken for the study from the total population. This study's total population is 1,28,879, and the sample size will be 399. The Taro Yamane Formula is used to calculate the sample size.

$$\boldsymbol{n = \frac{N}{1 + N * (e^2)}}$$

Where;

N= population size

e= Margin of error (percentage in decimal form)

n= sample size

Sample Size Calculation: $= \frac{128879}{(1+128879*0.05^2)}$

$= \frac{128879}{(1+128879*0.0025)}$

$= \frac{128879}{(1+322.1975)}$

= 398.8 approx. 399

**95% confidence level and p=0.5 are assume*

E. Sampling Technique: -

The stratified random sampling technique selected sampling units (respondents) from the total population. The entire population is divided into different categories of financial professions based on designation and level of certified registration under SEBI and ICAI where they are designated. The number of certified financial professions was decided in proportion to the population. Table 1.5 explains the sample selection from the total population.

Table 1.7
Sample selection from each Sub-group

Sr. No	Financial professions	Papulation	Sample
1	Financial Analyst	779	83
2	Financial Advisor	1334	60
3	Financial Planner	1400	98
4	Financial Manager	366	121
5	Chartered Account	125000	38
	Total population	1,28,879	400

Source: SEBI & ICAI

Note: Adjustment of Non-Response,

(Effective sample size/ (1-non response rate anticipated)

Here, chartered Account sample is 38, (38/ (1-0.62) = 100 unit

The effective sample size is 38 per cent, and the non-response sample size is more than 20 per cent, hence chartered account (CA) sample size drops.

9.3 DATA COLLECTION METHOD

The study is based on both secondary and primary data. The data required for the study is secondary data. At the same time, primary data is used to fulfil only one objective. In this regard, companies' financial information or annual reports, the **CMIE Prowess** Database, **SIAM** Statistics and Statista are major secondary sources for the data. A structured questionnaire was prepared and administered among the sample respondents selected for primary data.

9.3.1 Secondary Data

The present research study is based on secondary data, which involves a detailed study of working capital management in selected Four-wheeler passenger car manufacturing companies in India. *The secondary data have been collected from different sources:* The study is mainly based on secondary data. The major source of data analysed and interpreted in this study related to all those companies selected is the **CMIE PROWESS** database, which is the most reliable of the empowered corporate databases of the **Centre for Monitoring the Indian Economy (CMIE).** Established in 1976, CMIE is a leading business information company that provides financial performance time series data of Indian companies through a paid subscription, and its database is updated daily. It contains a highly normalized database built on a sound understanding of disclosure in India on around 12,000 companies, including public, private, co-operative and joint-sector companies. The database provides financial statements, ratio analysis, funds flow, cash flow, product profiles, returns and risk on the stock market, etc. This database's primary source is the annual reports of individual companies. For listed companies, the database includes data sourced from the stock exchanges. The quality of the results depends upon the correctness and dependability of the **Prowess CMIE database**. Prowess Reports provide tabulations to enable a detailed assessment of a company's financial performance. The tabulations enable comparison over time and provide a detailed break-up of the indicators.

Data for a few companies were unavailable for the study period from 2011-12 to 2020-21. The data was also cross-checked with the companies' published annual reports and with Capitaline and Ace Equity databases for the non-availability of data for these companies. Still, these databases also did not have any information about these companies. Thus, the process led to a final sample of 10 Four-wheeler passenger car

manufacturing companies, keeping in mind aspects like top Four-wheeler passenger car manufacturing companies based on their market shares and continuous availability of data for the study period.

Besides prowess databases, relevant secondary data has also been collected: **CMIE** Publications, Annual Survey of Industry, Business newspapers, Reports on Currency and Finance, Libraries of various Research Institutions, RBI, SIAM, through the Internet, etc. The study required a variety of data sources. Therefore, the Department of Industrial Policy & Promotion and the selected companies' official websites are searched.

9.3.2 Primary Data

Primary data were collected through a self-administered structured questionnaire from 400 financial professions certified registered under SEBI and chartered accountants working full time as per data source ICAI. The structured questionnaire was followed to collect the participants' demographic profiles and perceptions of factors affecting the company's efficiency of working capital management. The researcher used questionnaires in the collection of data. According to Bernard and Ryan (2010), a particular instrument should always be based on research questions and objectives. Denscombe (2011) cites that questionnaires rely on written information supplied directly by people in response to questions asked by the researcher. Primary data were analysed using statistical tools. Statistical tools analyse the impact, association, relationship and influences. The following independent variables used as eighteen factors influence the efficiency of working capital management in selected Four-wheeler passenger car manufacturing companies such as the nature of the business, Scale of operation, operating cycle, seasonal factors, product cycle, Credit Allowed, Credit availed, operating efficiency, inventory management, growth prospects,
Level of completion, inflation, liquidity, account receivables, account payables-
Dividend policy, plant efficiency and taxation policy.

The questionnaires consisted of two sections: Section I, which focuses on demographic data such as gender, age, Academic qualifications and financial professions, focuses on demographic data such as gender, age, Academic qualifications and financial professions, participant Perceptions on Factors Influencing the Efficiency of Working Capital Management in Selected Four-wheeler companies respondents were requested

to Likert Scale their consent on a five-point scale to the place indicating the closest to their agreements and disagreements. A numerical score is assigned to each degree on the Likert Scale to measure the responses and scoring purposes. In this study, a Likert scale ranging from 1 to 5 has been used, strongly agree, agree, neither agree nor disagree, disagree, strongly disagree, and strongly disagree. The data source for this research was the questionnaire participants' responses. All the participants were asked to complete the questionnaire at their convenience and return it, but most were also made to submit their responses by mail.

9.3 DATA ANALYSIS

For this study, most of the data come from secondary sources. Data has been collected in raw form and then made suitable for analysis per the methodology defined for the purpose. A questionnaire was chosen as the tool for data collection as primary data was used to fulfil only one objective.

Statistical tools used: -

The following statistical tools are used for analysing data collected and testing the hypothesis. For descriptive analysis, (i) Ratio analysis. (ii) Arithmetic Mean (X) (iii) Co-efficient of variations (CV) (iv) Compound annual growth rate (CAGR) (v) Trend percentage and least square method and for inferential analysis parametric test are used (i) T-test (ii) Chi-Square Test and Fisher's exact test (iii) Analysis of Variance (ANOVA) (iv) Post Hoc Analysis (v) Factor Analysis (vi) Structure equation Model (SEM) (vii) Path Model (viii) Analysis of variance (F-test) (ix) Pearson coefficient of correlation and (x)Simple & Multiple regression

9.4 RELIABILITY ANALYSIS

The reliability analysis is tested using the alpha (Cronbach's) method. A reliability coefficient of 0.7 or greater is generally considered reliable in the literature. When the reliability coefficient is 0.7 or greater, it is concluded that the data collected by the researcher is reliable and can be used for further analysis. Cronbach's alpha reliability coefficient was calculated for the respondent's response to all the questions on the Likert Scale under various categories in the questionnaire. The overall reliability coefficient turned out to be 0.967. Therefore, it indicates that the opinions given by the respondents in the form of scales are reliable.

9.5 PERIOD OF THE STUDY

The ten years is chosen to have a fairly long, cyclically well-balanced period, for which reasonably homogenous, reliable, and up-to-date financial data would be available. Furthermore, the span chosen for the study is the period of liberalization. Hence, the period from 2011-12 to 2020-21 is an era of growth in working capital management in the manufacturing sector, particularly in the automobile industry, and has a genuine economic significance.

10. SCOPE OF THE STUDY

The scope of the present study includes a comprehensive study of working capital management in selected Four-wheeler passenger car manufacturing companies in India. Under Four-wheeler passenger car manufacturing companies, only Ten Four-wheeler passenger car manufacturing companies were selected for the study, and only the sample companies were considered for the evaluation part. This study covers the reasons for studying working capital management in selected Four-wheeler passenger car manufacturing companies in India and its significance. For the theoretical understanding, empirical analysis of working capital management and various concepts have come under the study's purview. The proposed study was based on secondary and primary data, the secondary data was collected from the CMIE prowess database, and the Annual report and primary data were collected through a structured questionnaire. Another part of the study is devoted to the various approaches to studying working capital management. For the analytical and technical study, both accounting and statistical tools were used, and the study period has been confirmed to be the years between 2011–12 to 2020–21. In this study, there are binary concepts relating to working capital: gross and net are used in measuring profitability and liquidity, respectively. Cash, inventory, and receivables are three major components of working capital that are also included. However, the study did not limit its results to just statistical analysis. Theoretical implications were also tracked for each company based on the mapping process of observed relationships with the predicted signs.

11. LIMITATIONS OF THE STUDY

1. Only ten Four-wheeler passenger car manufacturing companies have been selected; hence it does not represent the full picture of the entire automobile industry.

2. Secondary data was obtained from the published Annual reports & CMIE Prowess, and its findings depend entirely on the accuracy of such data.
3. For primary data, the study uses a questionnaire with stratified random sampling. The analysis was based on the respondents' perspectives. It may be closer to the truth.
4. The present study is largely based on ratio analysis, which has its own limitations. The study analysis used only selected ratios; other ratios were not covered in the analysis.
5. The analysis of the financial statements of companies gives problem-solving indicators. The data analysis was external, and researchers had no access to internal data.
6. Found variations in the data collected from the official website of the company annual report and CMIE prowess database.

Despite these limitations, a sincere attempt has been made to arrive at a fairly objective, representative conclusion by making the best use of the data available to make the study purposeful.

12. CHAPTER SCHEME

The total work has been divided into six chapters to present this research. The layout of these chapters is shown below, and each chapter's contents are explained as follows: -

Chapter- I: Introduction

This chapter presents an introduction to the subject matter of research and technical aspects such as measurement of the variables, Statements of the Problem, need for the study, research questions, objective of the study, the hypothesis of the study, research design and research methodology, limitations of the study and layout of the report.

Chapter-II: Conceptual and theoretical framework of working capital management and Review of literature

This chapter deals with the conceptual framework of working capital management and reviews previous related studies and reports. The literature analysis also explained the research gap for the present study. It includes reviewing previous theoretical and

empirical studies on working capital management practices in the automobile industry.

Chapter-III: An Overview: Profiles of Four-Wheeler Automobile Companies in India

This chapter provides an outline of selected Four-wheeler companies in India, which includes the growth and performance of Four-wheeler companies and the -history of the automobile industry. This study also explores the selected Four-wheeler passenger car manufacturing companies' profiles during the study period.

Chapter-IV: A comprehensive study of working capital management in selected Four-wheeler automobile companies in India: - Secondary Data Analysis

This chapter deals with the size, composition, circulation, growth and sources of working capital and its components, such as inventory management, receivable management, and cash management. This chapter touches in-depth on the study of working capital and its components. This chapter gives a calculation based on the secondary data.

Chapter-V: Working Capital Management in selected Four-wheeler automobile companies in India: -An Empirical Analysis

This chapter deals with empirical analysis of working capital, such as trend analysis, the efficiency of working capital, the pattern of working capital management, assessment of liquidity, the impact of working capital on profitability and estimating demand for working capital. This chapter analyses and interprets the working capital management in selected Four-wheeler companies based on secondary and primary data, answering the research questions and testing the related hypothesis.

Chapter VI-Summary of findings, suggestions and conclusion

This chapter summarizes the findings and discussions presented in the previous chapters. Further recommendations and suggestions are also fallow part of this chapter. The direction for further research based on the study is provided, and finally, the conclusion is given.

13. MAJOR FINDINGS OF THE STUDY

The present study was A comprehensive study of working capital management in selected four-wheeler automobile companies in India. This chapter focuses on the summary of findings from ratio analysis and inferential analysis. In this discussion, the researcher focused on only those findings that are considered significant to the study's objectives. In addition, this chapter also gave suggestions, conclusions, and directions for future research.

13.1 KEY FINDINGS OF THE STUDY

13.1.1 Size of working Capital

1. Size of working capital in absolute and relative terms found that Maruti Suzuki India Ltd., Mahindra & Mahindra Ltd., and Honda Cars India Ltd. had the largest current assets (CA), and Tata Motors Ltd., Renault India Pvt. Ltd., and Fiat India Automobiles Pvt. Ltd. had the smallest current liabilities (CL). The remaining companies, Toyota Kirloskar Motor Pvt. Ltd., Hyundai Motor India Ltd., Ford India Pvt. Ltd., and Nissan Motor India Pvt. Ltd., have a consistent size of current assets (CA) and current liabilities (CL) operating performance.

2. The ratio of current assets to total assets found that Hyundai Motor India Ltd. has the maximum current assets to total assets ratio of 1.64 times. In contrast, Honda Cars India Ltd. has a minimum mean ratio of 0.11. The mean ratio of the remaining companies is between 1.63 and 0.20. The value of the coefficient of variance (CV), which ranges between 0.06 per cent and 1.06 per cent, shows big changes in the ratio. Mahindra & Mahindra Ltd., Tata Motors Ltd., and Toyota Kirloskar Motor Pvt. Ltd. have fewer variations in the ratio, and Renault India Pvt. Ltd. has the highest variations. It means Tata Motors Ltd. and Toyota Kirloskar Motor Pvt. Ltd. have better working capital control than other companies. Still, Renault India Pvt. Ltd. has less control over the ratio.

3. The ratio of current assets to Fixed assets found that Renault India Pvt. ltd. Has a maximum ratio of 20.66 times. The value CV ranges between 0.18 per cent to 1.11 per cent, where Tata motor Ltd. and Mahindra & Mahindra Ltd. have fewer variations in ratios while Renault India Pvt. Ltd has the highest variations. It indicates that Tata motor Ltd., Mahindra & Mahindra Ltd., and Renault India Pvt.

Ltd has less control over the ratios.

4. The ratio of current assets to total sales was the lowest percentage. 0.17 and 0.24 for Honda Cars India Ltd. and Maruti Suzuki India Ltd., respectively. Both these companies have a comparatively small percentage ratio of current assets to sales. These are comparatively small based on investment in CA, CL, and NWC and all the components of current assets. On the other hand, Renault India Pvt. Ltd., Ford India Pvt. Ltd., and Fiat India Automobiles Pvt. Ltd. cannot properly utilize current assets to generate sales. Renault India Pvt. Ltd., Ford India Pvt. Ltd., and Fiat India Automobiles Pvt. Ltd. have invested 1.96, 0.89, and 0.53 times more than the standard ratio and more in the current assets for generating sales. According to the coefficient of variance (CV), based on their sales, other companies have more control over their current assets than Renault Indian Pvt. Ltd. and Fiat India Automobiles Pvt. Ltd.

13.1.2 Composition of working Capital

5. The inventory rate to total current assets found a downward trend regarding the ratio. Nissan Motor India Pvt. Ltd., which has the minimum proportion inventory in current assets, has registered a faster-declining trend than any other company because its average trend value is the minimum, its coefficient of variance (CV) is the maximum, and its CAGR is negative. On the other hand, Honda Cars India Ltd. has the max inventory to total current assets ratio and registered a slow declining rate with a maximum coefficient of variance (CV) and a negative CAGR.

6. The ratio of receivables to total current assets found a fluctuating trend regarding the ratio. Toyota Kirloskar Motor Pvt. Ltd. has the minimum proportion of receivable in current assets and coefficient of variance (CV), which is the second highest, and CAGR, the lowest and negative. Nissan Motor India Pvt. Ltd. has a maximum receivable to total current assets ratio and a slowly declining rate with a maximum coefficient of variance (CV) and a negative CAGR. Nissan Motor India Pvt. Ltd. loses control of the ratio more than any other company. Hence, Toyota Kirloskar Motor Pvt. Ltd. has control over the ratio.

7. The ratio of cash to total current assets found a fluctuating trend regarding the ratio. It is noticed from the average trend value that Tata Motors Ltd., Mahindra & Mahindra Ltd., Toyota Kirloskar Motor Pvt. Ltd., Honda Cars India Ltd., Ford India

Pvt. Ltd., and Fiat India Automobiles Pvt. Ltd. have an increasing trend. In contrast, the remaining companies, Maruti Suzuki India Ltd., Hyundai Motor India Ltd., and Nissan Motor India Pvt. Ltd., have a downward trend. The CAGR is also negative for Fiat India Automobiles Pvt. Ltd. High coefficient of variation (CV) values in companies and the industry indicate very low control regarding the proportion of cash to total current assets during the study period.

8. The ratio of other current assets to total current assets found that Maruti Suzuki India Ltd., is maximum with CV and CAGR are declining positions with a negative value and Fiat India Automobiles Pvt. Ltd. had the lowest percentage of average mean with the highest CV, and Negative CAGR compare to remaining companies.

13.1.3 Circulation of working Capital

9. Inventory turnover ratio (ITR) found that is satisfactory in the industry, and overall, ITR was very high during the study period. It indicates that the situation is improving and good. On average, the industry's mean ratio is 39.89 times. Renault India Pvt. Ltd. had the highest mean value of 237.22 times, indicating good performance in inventory management. The coefficient of variation (CV) of 2.29 for Renault India Pvt. Ltd. further indicates that it had better inventory control than other companies. Tata Motors Ltd. and Fiat India Automobiles Pvt. Ltd. have the lowest mean ratio of 11.09 to 12.25, which shows poor performance in inventory management and doesn't have better inventory control than other companies. The rest of the companies, like Maruti Suzuki India Ltd., Hyundai Motor India Ltd., Mahindra & Mahindra Ltd., Toyota Kirloskar Motor Pvt. Ltd., Honda Cars India Ltd., Ford India Pvt. Ltd., and Nissan Motor India Pvt. Ltd., aren't as good at inventory control as they used to be.

10. The receivable turnover ratio (RTR) found that Maruti Suzuki India Ltd., Toyota Kirloskar Motor Pvt. Ltd., Renault India Pvt. Ltd., and Honda Cars India Ltd. enjoy better positions regarding the receivable ratios. At the same time, the remaining companies reflect poor positions. Further, the coefficient of variation (CV) again reflects the position that Maruti Suzuki India Ltd., Tata Motors Ltd., and Mahindra & Mahindra Ltd. companies have maximum control over the receivable turnover ratio (RTR), and Hyundai Motor India Ltd., Honda Cars India Ltd., Ford India Pvt. Ltd., and Fiat India Automobiles Pvt. Ltd. have maximum ratios. This fact points

out the necessity of improving receivables management, especially in these companies.

11. Cash turnover ratio (CTR) found that the cash turnover ratio (CTR) has been quite high in Maruti Suzuki India Ltd. and Honda Cars India Ltd. compared to other companies. The mean value of CTR for the industry as a whole comes to 208.57 times. The coefficient of variation (CV) shows that all companies, as well as the industry, have greater variations regarding the cash turnover ratio. Mahindra & Mahindra Ltd. has the least variations, whereas Honda Cars India Ltd. has faced the highest fluctuations. It shows that cash management is not properly done in selected Four-wheeler passenger car manufacturing companies in India.

12. Working capital turnover ratio (WCTR) found that Maruti Suzuki India Ltd. had a ratio of 15.28 times, which is the lowest, and the range of ratios lies between 3.30 times and 29.17 times. Toyota Kirloskar Motor Pvt. Ltd. had a maximum working capital turnover ratio (WCTR) of 1.10 per cent and a moderate CV of 1.10 per cent, with a moderate coefficient of variance (CV), which indicates that the companies were unable to exercise any control over the ratio. In the study, the CV values of Hyundai Motor India Ltd., Tata Motors Ltd., Mahindra & Mahindra Ltd., Renault India, Honda Cars India Ltd., and Ford India Pvt. Ltd. were high. The ratio changed a lot during the period.

13.1.4 Financing of working capital

13. The ratio of long term-sources to current assets found that companies were showing a negative mean value, which indicates that if current liabilities are greater than current assets and a large cash payment decreases current assets or a large amount of credit is extended in the form of accounts payable, Hyundai Motor India Ltd. and Toyota Kirloskar Motor Pvt. Ltd., have utilized a higher proportion of long-term funds, that is 0.4 percentage. In contrast, Honda Cars India Ltd. has the lowest ratio of -1.03 per cent, which shows Honda Cars India Ltd. has utilized the least amount of long-term funds. Further, CV is lowest in Maruti Suzuki India Ltd. and highest in Nissan Motor India Pvt. Ltd., which shows that Maruti Suzuki India Ltd has better control, whereas Nissan Motor India Pvt. Ltd has the least control over the ratio. As a result, Nissan Motor India Pvt. Ltd. should pay close attention to the ratio to maintain the long-term source and long-term survival.

14. The ratio of creditors to current assets found that Maruti Suzuki India Ltd. and Honda Cars India Ltd. companies have utilized higher creditor ratios of 0.61 per cent and 0.86 per cent. In contrast, Tata Motors Ltd. and Toyota Kirloskar Motor Pvt. Ltd. have the least ratio of 0.35 per cent and 0.33 per cent, which shows Tata Motors Ltd. and Toyota Kirloskar Motor Pvt. Ltd. has liquidity, hence Tata Motors Ltd. and Toyota Kirloskar Motor Pvt. Ltd needs to improve its ratio of creditors; then, only the company will be able to pay off its current liabilities. Further coefficient of variation (CV) is lowest in Honda Cars India Ltd. and highest in Renault India Pvt. Ltd., which shows Honda Cars India Ltd., has better control, whereas Renault India Pvt. Ltd has the least control over the ratio. So, Renault India Pvt. Ltd. should give proper attention to the ratio for the maintenance that helps individual companies more easily make current debt payments.

15. The ratio of acceptance to current assets found that an average of 0.54 percentage funds invested in current assets have been financed through acceptances during the study period. The dependence on acceptances is found more in Tata Motors Ltd. and Honda Cars India Ltd. (0.86 percentage), the same ratio in both companies, and the least in Hyundai Motor India Ltd. and Toyota Kirloskar Motor Pvt. Ltd. (0.35 percentage and 0.33 percentage). The coefficient of variance (CV) values shows large fluctuations in the ratio ranging from 0.10 per cent to 0.94 per cent, with Renault India Pvt. Ltd. having the highest coefficient of variance (CV) and Mahindra & Mahindra Ltd. having the lowest at 0.10 per cent. Hence, we conclude that Renault India Pvt. Ltd. did not use more acceptance as a source of funds.

16. The ratio of provisions to current assets found that the dependence on provisions has been found more in Tata Motors Ltd., at 0.33 per cent, and least in Ford India Pvt. Ltd., at 0.03 per cent. Maruti Suzuki India Ltd. 0.27 per cent, Hyundai Motor India Ltd. 0.30 per cent, Mahindra & Mahindra Ltd. 0.16 per cent, Toyota Kirloskar Motor Pvt. Ltd. 0.23 per cent, Renault India Pvt. Ltd. 0.13 per cent, Honda Cars India Ltd. 0.13 percentage, Nissan Motor India Pvt. Ltd. 0.05 percentage, and Fiat India Automobiles Pvt. Ltd. 0.07 percentage, respectively. Further, coefficients of variation (CV) indicate that current asset provisions have fluctuations compared to any other source of financing in companies. It ranges from 0.22 per cent to 0.92 per cent. Honda Cars India Ltd. has experienced the highest variations, whereas the least variations were noticed in Tata Motors Ltd. This shows that there hasn't been

a set policy about how to pay for current assets in the companies.

13.1.5 Growth of working capital

17. It was found that the overall average growth rates in current assets and sales in the industry are 33.51 per cent and 42.00 per cent, respectively. Further, Honda Cars India Ltd., 3.53 per cent, Ford India Pvt. Ltd., 3.47 per cent, Nissan Motor India Pvt. Ltd., 3.32 per cent, and Fiat India Automobiles Pvt. Ltd., 3.05 per cent had current assets close to the sales growth rate. Maruti Suzuki India Ltd., Hyundai Motor India Ltd., Tata Motors Ltd., Mahindra & Mahindra Ltd., Toyota Kirloskar Motor Pvt. Ltd., and Renault India Pvt. Ltd. are among the remaining four-wheeler companies with a large gap in growth rate between current assets and sales. Shows sales have increased significantly more than current assets in all the selected four-wheeler companies. Working capital of 33.51 per cent of sales means it takes 33.51 per cent out of every sale to fund the working capital cycle. Hence, the higher the sales, the greater the profits; therefore, the more appropriate use of working capital has been made. It concludes that all the four-wheeler selected companies show a positive growth rate in working capital to sales. It is because when companies use the same working capital to generate more sales, it means that they are using the same funds over and over again.

18. Relationship between gross working capital and sales- The correlation between sales and gross working capital was observed to be positive, strong, and statistically significant, resulting in the well-being condition of the companies, where the relationship was even stronger, better, and more significant. Testing the hypothesis relationship between gross working capital and sales using regression analysis and Pearson correlation co-efficient with the equation ($Y = a + bx$) results from all the four-wheeler automobile companies are highly significant at the 0.01 level with a t-value (4.21).

INVENTORY MANAGEMENT

13.1.6 Size of Inventory

19. It was found that the Size of Inventory in absolute terms and relative terms represent Maruti Suzuki India Ltd., Hyundai Motor India Ltd., Tata Motors Ltd., and Mahindra & Mahindra Ltd. had the highest live inventory, and the remaining companies found decreasing levels and lower levels of inventories during the study

period. However, the inventory size is not very high in selected Four-wheeler passenger car manufacturing companies.

20. It is also found that the average rate inventory to current assets comes to 0.14 per cent, as against 0.06, 0.12, 0.08, 0.07, 0.11, 0.46, 0.16, 0.21, 0.07, and 0.07 for companies like Maruti Suzuki India Ltd., Hyundai Motor India Ltd., Tata Motors Ltd., Mahindra & Mahindra Ltd., Toyota Kirloskar Motor Pvt. Ltd., Renault India Pvt. Ltd., Honda India Ltd., Ford India Pvt. Ltd., Nissan Motor India Pvt. Ltd., and Fiat India Automobiles Pvt. Ltd., the highest ratio percentage is 0.46, and the lowest ratio percentage for Maruti Suzuki India Ltd.

21. It was also found that the highest ratio percentage is 1.53 for Renault India Pvt. Ltd. and Nissan Motor India Pvt. Ltd. compared to other companies. Hence, the lower the inventory to total sales ratio, the more efficient the company allocates capital to inventory.

13.1.7 Composition of Inventory

22. Components & raw- materials inventory to inventory found that average values fluctuated in their ratio of percentages from one company to another. Whereas Renault India Pvt. Ltd. has the highest and Mahindra & Mahindra Ltd. has the lowest ratio percentage compared to other companies. Further, the coefficient of variance (CV) is moderate in all the companies except Renault India Pvt. Ltd. and Ford India Pvt. Ltd., which have faced more fluctuations. However, the average ratio of stores and spare parts to inventory has changed and fluctuated all year from company to company.

23. Store & spares inventory found that the average percentage of one company to another was lower than average. Renault India Pvt. Ltd. has the highest, and Honda Cars India Ltd. has the lowest ratio percentage. Hence, the overall percentage of companies founds is decreasing and low; this is a good sign, so it should be checked, and businesses should have the chance to make the most money possible. Further, the coefficient of variance (CV) values is higher in all companies except Mahindra & Mahindra Ltd. and Renault India Pvt. Ltd. While the average ratio of stores and spare parts to inventory is going down, the company, Nissan Motor India Pvt. Ltd., is the only one that is increasing.

24. Inventory (tools, jigs & dies) found that the average percentage of one company to another was lower than the average value. Whereas Renault India Pvt. Ltd. has the highest and Mahindra & Mahindra Ltd. has the lowest ratio percentage. Hence, the overall percentage is increasing and fluctuating in all the companies. Furthermore, it also shows that high CV values reflect great fluctuations faced by the companies individually and the total industry regarding this component.

25. Work in process inventory found that the average percentage of one company to another was lower than average. Whereas Renault India Pvt. Ltd. has the highest and Mahindra & Mahindra Ltd. has the lowest ratio percentage. Hence, the overall percentage is increasing and fluctuating almost in all the selected four-wheeler companies. This increasing tendency is not a good sign, so it must be checked, and action must be taken against it; otherwise, it hampers profitability. High coefficient value (CV) values reflect great fluctuations, whereas Nissan Motor India Pvt. Ltd. has an upward trend regarding work-in-progress inventory. This is because Nissan Motor India Private Limited has the highest average value and is going up. It means that the companies must pay attention to their operating cycles, or it will hurt their profits.

26. Finished goods inventory found that, except for Nissan Motor India Pvt. Ltd., the remaining companies have a lower ratio of finished goods inventory to inventory. Furthermore, the coefficient value (CV) values show that variations are very high, and all the companies have a fluctuation in their ratio percentage from lowest to highest, ranging from 0.05 per cent to 0.57 per cent. Regarding finished goods inventory, except for Tata Motors Ltd., the remaining companies show a downward trend and are decreasing to meet the day-to-day objectives.

13.1.8 Circulation of Inventory

27. Holding period of total aggregate inventory found that a holding period of less than 30 days in Tata Motors Ltd., Honda Cars India Ltd., Ford India Pvt. Ltd., and Fiat India Automobiles Pvt. Ltd. Further, companies well as the total industry, have been able to reduce the total inventory holding period. It is a good sign because a longer holding period creates problems in the performance of companies. Whereas the coefficient of variance (CV) is moderate, Renault India Pvt. Ltd. has largely reduced its holding period, and Maruti Suzuki India Ltd. has a minimum reduction regarding

the total/aggregate inventory holding period.

28. The holding period of components & raw materials inventory found a holding period of less than 30 days, except for Ford India Pvt. Ltd. The coefficient of variance (CV) shows less fluctuation. Hence, Ford India Pvt. Ltd. has also slashed its holding period, while Maruti Suzuki India Ltd. has only made a small cut in the time it takes to hold on to parts and raw materials.

29. Holding period of stores & spares inventory found that a holding period of less than 30 days, except for Renault India Pvt. Ltd. The values of the coefficient variance (CV) dictate that, as a whole, a reduction is lower; hence, Tata Motors Ltd. has also slashed its holding period, while Renault India Pvt. Ltd. has only made a small cut in the amount of time it keeps parts and raw materials in stock.

30. The holding period of tools, jigs, and dies found that a holding period of less than 30 days, except for Ford India Pvt. Ltd., and High coefficient of variance (CV), values further indicate that the industry has been able to widely reduce the holding period. But Ford India Pvt. Ltd.'s holding period increased during the study period, so it should reduce the holding period. Ford India Pvt. Ltd. should reduce the time tools, jigs, and dies are held.

31. The holding period of work-in-progress inventory found a decreasing trend with some fluctuations during the study period. The greatest decrease was observed in Honda Cars India Ltd., which has the shortest holding period, and the smallest decrease was observed in Hyundai Motor India Ltd., which already has the longest holding period. It indicates that Honda Cars India Ltd. enjoys a better position than Hyundai Motor India Ltd, which has a worse position, so Hyundai Motor India Ltd must make efforts to reduce the holding period. As shown by the high coefficient values (CV), there has been a big drop when people keep work in progress.

RECEIVABLE MANAGEMENT

13.1.9 Size of receivable management

32. In absolute and relative terms, the size of receivables found that Tata Motors Ltd. saw the most growth in 2018-19, and Honda Cars India Ltd.'s lowest investment in receivables was Rs. 275.34 crores. The total investment in the industry was Rs. 11896.00 crores. Maruti Suzuki India Ltd., Hyundai Motor India Ltd., Tata Motors

Ltd., Mahindra & Mahindra Ltd., Ford India Pvt. Ltd., and Nissan Motor India Pvt. Ltd. have experienced less growth than the remaining companies.

33. The ratio of receivables to total assets found that the mean percentage of receivables to total assets is 0.16 per cent, the highest in 2015-16 and the lowest in the year, at 0.09 in 2012. Nissan Motor India Pvt. Ltd. has the highest percentage of 0.38 per cent, and the lowest is 0.03 per cent for Toyota Kirloskar Motor Pvt. Ltd. The overall ratio of receivables to total assets fluctuates from company to company. Further, the coefficient of variance (CV) values in table 4.37 show very few fluctuations in receivables proportionate to total assets during the study period. Mahindra & Mahindra Ltd. has the least variations, and Ford India Pvt. Ltd. has the highest variations.

34. The ratio of receivables to current assets found that Nissan Motor India Pvt. Ltd. has the highest percentage of 0.50 per cent, and the lowest is 0.08 per cent for Toyota Kirloskar Motor Pvt. Ltd. The overall ratio of receivables to total assets is very low in fluctuation from company to company. Hence, it means that 20 per cent of the current assets are receivables, and if this ratio is very high, it means that the credit policy of companies may not be sound because too much money is locked up in the receivables. Further, the coefficient variance CV values are less fluctuations in receivables proportionate to current assets during the study period. Mahindra & Mahindra Ltd. has the least variations, and Renault India Pvt. Ltd. has the highest variations.

35. The ratio of receivables to sales found that Nissan Motor India Pvt. Ltd. has the highest percentage of 0.22 per cent, and the lowest is 0.02 per cent for Toyota Kirloskar Motor Pvt. Ltd. The overall ratio of receivables to sales is very moderate from company to company. Hence, the sales occur on credit, which is satisfactory, and as per the coefficient of variance (CV), it shows Mahindra & Mahindra Ltd. has the least variations. Renault India Pvt. Ltd. has the highest variations.

13.1.10 Composition of Receivables

36. The ratio of loans & advances to total receivables found that the mean percentage of loans and advances to total receivables is 12.85 per cent, the highest in 2011-12 and the lowest in the year since 0.68 per cent in 2015-16. Hence, Renault India Pvt. Ltd. has the highest percentage of 11.90 per cent, and the lowest is 0.42 per cent for

Toyota Kirloskar Motor Pvt. Ltd. The overall ratio of loans and advances to total receivables is highly variable from company to company. Companies have faced lower variations regarding loans and advances to total receivable during the study period. Because some companies had good credit policies and guidelines, the companies were careful not to take on too much risk.

37. The ratio of trade debtors to total receivables found that the mean percentage of trade debtors to total receivables is 25.08 per cent, the highest in 2011-12 and the lowest in the year since 2.88 per cent in 2019-20. Renault India Pvt. Ltd. has the highest percentage of 31.92 per cent, and the lowest is 0.42 per cent for Maruti Suzuki India Ltd. The overall ratio of trade debtors to total receivables is subject to high fluctuations from company to company.

38. Collection period of receivables found that Nissan Motor India Pvt. Ltd. has the highest number of days at 79, and the lowest is six days for Toyota Kirloskar Motor Pvt. Ltd. The overall collection period of receivables is subject to high fluctuations from company to company. Hence, the remaining companies have a less than 30-day collection period of receivable, and there is a moderate coefficient of variation (CV) value fluctuation, which indicates that the companies experienced moderate variations in receivable collection periods.

39. The collection period of trade debts found that Tata Motors Ltd. has the highest number of days at 139, and the lowest is five days for Maruti Suzuki India Ltd. The overall collection period of trade debts is subject to high fluctuations from company to company. The moderate coefficient of variation (CV) fluctuation indicates that the companies experienced moderate variations in the trade debt collection period.

CASH MANAGEMENT

13.1.11 Size of cash management

40. Size of cash in absolute & relative terms found that the size of the cash in the automobile industry was Rs. 8943.99 crores in 2011-12. From 2012-13 to 2016-17, the size of cash declined. Later, from 2017-18, there was high fluctuation, reaching a maximum of Rs. 31026.49 in 2020-21. Hyundai Motor India Ltd., the size of cash has an increasing trend with high fluctuations of Rs. 3669.28 crores, and at Renault India Pvt. Ltd., the size of cash has a decreasing trend with high fluctuations of

Rs.130.77 crores. If companies don't have an adequate supply of cash, they will have to borrow the money, pay interest, or sell off their liquid investments to generate the needed cash. Suppose companies expect a better return on their investments than they pay in interest on their borrowings. In that case, they might decide to invest their surplus cash and borrow any additional money they need for their activities.

13.1.12 Control of Cash Flows

41. The cash to total current assets ratio found that companies' fluctuation ranged from 0.26 per cent for Mahindra & Mahindra Ltd. to 1.37 per cent for Maruti Suzuki India Ltd. Hence, the ratio's values have been higher than their mean value. The coefficient of variance (CV) indicates Mahindra & Mahindra Ltd. is in a better place than the other companies when it comes to the ratio because its mean ratio is close to the industry's ratio. It also has the lowest coefficient of variation (CV) value.

42. The cash to current liabilities ratio fluctuated between 0.13 per cent in 2014-15 and 0.50 per cent in 2020-21. Respective companies' coefficient of variation (CV) trends had higher fluctuation. In contrast, companies' fluctuation was lower at 0.33 per cent for Mahindra & Mahindra Ltd. and 2.45 per cent for Renault India Pvt. Ltd. and Mahindra & Mahindra Ltd. and Fiat India Automobiles Pvt. Ltd. have enjoyed a better position regarding the ratio because their mean ratio is nearest to the industry's ratio. They also have the lowest CV value.

43. The ratio of cash to sales found that companies fluctuated from a lower 0.50 per cent for Mahindra & Mahindra Ltd. to a higher 1.45 per cent for Maruti Suzuki India Ltd. and Mahindra & Mahindra Ltd. have enjoyed a better position regarding the ratio because its mean ratio is nearest to the industry's ratio. It also has the least CV value.

13.1.13 Composition of cash management

44. The overall composition of cash management found that the lower cash balance at the bank was held by Renault India Pvt. Ltd. and the highest cash balance at the bank by Hyundai Motor India Ltd. Furthermore, the coefficient (CV) values in Mahindra & Mahindra Ltd. and Maruti Suzuki India Ltd. range from low to high, highlighting the high variation rate in the ratio percentage companies. Except for a

few companies during the study periods, Renault India Pvt. Ltd., Honda Cars India Ltd., and Ford India Pvt. Ltd. did not have much higher. Consequently, Maruti Suzuki India Ltd., Hyundai Motor India Ltd., Tata Motors Ltd., Mahindra & Mahindra Ltd., Toyota Kirloskar Motor Pvt. Ltd., and Fiat India Automobiles Pvt. Ltd. do not need to maintain some excess cash on hand to avoid taking short-term loans.

13.1.14 Adequacy of cash

45. Operational Adequacy of cash -number of days of operating expenses found that the overall average ratio of cash in terms of the number of days of operating expenses is 30 days for Renault India Pvt. Ltd. and two days lower for Maruti Suzuki India Ltd. and Nissan Motor India Pvt. Ltd. The coefficient of variance (CV) indicates that Ford India Pvt. Ltd. has experienced the maximum fluctuations in the ratio. In contrast, Hyundai Motor India Ltd., Tata Motors Ltd., Mahindra & Mahindra Ltd., Toyota Kirloskar Motor Pvt. Ltd., Nissan Motor India Pvt. Ltd., and Fiat India Automobiles Pvt. Ltd. have more stability in the ratio during the study period than remaining companies. From this, it may be inferred that Hyundai Motor India Ltd. has maintained its cash balances in a relatively sufficient quantity per operational requirements. Maruti Suzuki India Ltd. doesn't have enough cash on hand to cover the normal costs of running a business.

46. Current ratio to quick ratio found that only two companies, Hyundai Motor India Ltd. and Toyota Kirloskar Motor Pvt. Ltd., have maintained a quick ratio above the standard norm, i.e., 2:1 and 1:1. The industry average comes to 0.7 times, as against 1.1 times (the highest) in Hyundai Motor India Ltd. and Toyota Kirloskar Motor Pvt. Ltd. and 0.2 times (the least) in Honda Cars India Ltd. It may be said that the industry's short-term liquidity and solvency positions are satisfactory. Yet, except for Hyundai Motor India Ltd. and Toyota Kirloskar Motor Pvt. Ltd., the remaining companies should pay attention to the quick ratio.

47. Percentage of a cover of current assets found that Maruti Suzuki India Ltd. had the lowest average mean at 0.06 per cent, and Hyundai Motor India Ltd. had the highest average mean at 0.58 per cent. The high coefficient of variation (CV) reflects the high variations experienced in the industry. Among the companies, Mahindra & Mahindra Ltd. occupies the best place regarding the ratio.

48. Percentage of net cash flow to current liabilities found that Renault India Private Ltd. had a negative figure of 0.53 and Maruti Suzuki India Ltd. had a positive figure of 0.48 per cent. Further, a high coefficient of variation (CV) reflects the high variations experienced in the industry. Among India's selected Four-wheeler passenger car manufacturing companies, Toyota Kirloskar Motor Pvt. Ltd. occupies the best place regarding the ratio.

13.2 WORKING CAPITAL TRENDS

1. The estimated values of net working capital of Maruti Suzuki India Ltd. were positive, with a downward trend during the whole of the study period.
2. The actual working capital was less than the trend value and had a fluctuating trend during the study period. Therefore, the estimated values of the net working capital of Hyundai Motor India Ltd. were positive, with an upward trend during the study period.
3. The actual working capital was less than the trend value for all years. Therefore, the estimated values of the net working capital of Tata Motors Ltd. were negative, with a moderate fluctuating trend during the whole of the study period.
4. The actual working capital was less than the trend value from 2011-12 to 2016-17, and it increased for the remaining years. Therefore, the estimated values of net working capital of Mahindra & Mahindra Ltd. were positive with lower fluctuations and showed upward trends during the study period.
5. The working capital was less than the trend value from 2011-12 to 2016-17. Therefore, the estimated values of the net working capital of Toyota Kirloskar Motor Pvt. Ltd. were positive, with a moderate fluctuating trend throughout the study period.
6. The actual working capital was less than the trend value for all years except 2018–19 to 2020–21. Therefore, the estimated values of net working capital of Renault India Pvt. Ltd. were positive and negative, with a downward trend during the whole of the study period.
7. The actual working capital was less than the trend value for all years except 2019–20 to 2020–21. Therefore, the estimated values of net working capital of Honda

Cars India Ltd**.** were negative with a downward trend during the whole of the study period.

8. The estimated values of net working capital of Ford India Pvt. Ltd. were negative with a downward trend during the whole of the study period.
9. The estimated values of net working capital of Nissan Motor India Pvt. Ltd**.** were positive with lower fluctuations and showed upward trends during the study period.
10. Actual working capital was less than the trend value from 2011-12 to 2017-18, and it increased for the remaining years. Therefore, the estimated values of net working capital of Fiat India Automobiles Pvt. Ltd**.** were positive with lower fluctuations and showed trends upward during the study period.
11. The statistical result shows a significant difference between the working capital trends in companies, where Maruti Suzuki India Ltd., Hyundai Motor India Ltd., Tata Motors Ltd., Mahindra & Mahindra Ltd., Renault India Pvt. Ltd. are significant at a level of 5 percentage points. Honda Cars India Ltd. and the remaining companies, Toyota Kirloskar Motor Pvt. Ltd., Ford India Pvt. Ltd., Nissan Motor India Pvt. Ltd., and Fiat India Automobiles Pvt. Ltd., are significant at a level of 1 per cent. Hence, the study's finding shows each company has a significant difference in its trend.

13.3 EFFICIENCY OF WORKING CAPITAL MANAGEMENT

1. To determine the association between socio-demographic factors and the efficiency of working capital management, the Fisher's Exact Test or Chi-Square test is used to determine whether the Fisher's Exact test or chi-square test are used in conjunction with each other. Such as (1) the nature of the business and (2) the size of operations, (3) the operating cycle, (4) seasonal factors, (5) Production Cycle, (6) Credit Allowed, (7) Credit Availed, (8) Operating efficiency, (9) Inventory Management, (10) Growth Prospects, (11) Level of Competition, (12) Inflation, (13) Liquidity, (14) Account Receivable, (15) Account Payable, (16) Dividend Policy, (17) Plant Efficiency, and (18) Taxation Policy. The statistical result shows a significant association among all the factors between the respondents' age, total experience, and financial professions and their perception.
2. An ANOVA was conducted to determine whether there is any significant difference

in perception related to the efficiency of working capital between various categories of financial professions. Analysis of Variance (ANOVA) shows a significant difference in the perception related to all factors that affect the efficiency of working capital management. Financial professionals have a significant impact on the perception of some of the factors: credit allowed, the credit availed, inventory management, level of competition, inflation, liquidity, account receivable, account payable, and taxation policy, but they don't have a big impact on the perception of the factors that affect the efficiency of working capital management: the size of the company, the operating cycle, the season, the production cycle, operating efficiency, dividend policy, and plant efficiency.

3. Post Hoc Analysis finds out whether respondents of any two categories of financial professions form one group that is the same in perception related to the credit allowed, the credit availed, inventory management, level of competition, inflation, liquidity, account receivable, account payable, and taxation policy., whereas, analysis results show chartered accountants form one group that has a higher level of agreement with the variables related to the credit allowed, the credit availed, inventory management, and level of competition. And other respondents with financial professions—financial analysts, financial planners, and chartered accountants- comprise one group that agrees with the variable of liquidity and account receivable. The last group of respondents with financial professions (financial analysts) form one group with a higher agreement level with the account payable variables. In comparison, the rest of the respondents have a lower level of agreement.

4. Factor Analysis is used to reduce variable complexity to greater simplicity. From the analysis, three components were extracted (FIEWCM_1, FIEWCM_2, and FIEWCM_3). All three components contributed to 68.15 per cent of the variance. The nature of the business requires a large amount of capital to carry out the projects. NB2 with a value of 0.692.

5. Ranks of grouped items that influence the efficiency of working capital, based on a Rotated Component Matrix (RCM) for ranking only, the variables whose loadings are equivalent to 0.70 and above are considered for each component. Analysis results show, in order of importance from first to fifth, the scale of operation, nature of business, dividend policy, seasonal factors, and account payable are the factors

that have the greatest influence on the efficiency of working capital management.

6. To test the hypnotized (conceptual) model, structural equation modelling (SEM) was carried out using SPSS AMOS 23.0 software. The Chi-square goodness of fit results was used to test whether the available data fits into the proposed hypnotized model with the estimated model. Variable loadings were greater than 0.7, so it retained all the components derived from factor analysis. The CFA of all the constructs also tests the construct, convergence, and discriminant validity of the various indicators. Nature of the business, the scale of operations, operating cycle, seasonal factors, production cycle, the credit allowed, the credit availed, operating efficiency, investment management, growth prospects, level of competition, inflation, liquidity, account receivable, account payable, dividend policy, plant efficiency, and taxation policy are all variables with loadings greater than 0.7.
7. Structural equation modelling was used to study the impact of the financial professions on factors related to the efficiency of working capital based on operating efficiency. Still, the analysis resulted in an unacceptable model (with a Chi-square value of 28.379 and a p-value of 0.0001 0.01). Accept the model's significant value (p-value should be greater than 0.05) and have the required fit indices. Hence, some modifications to the model were applied, and the modified measurement model resulted in an accepted model by satisfying the required fit indices. The operating efficiency factor is considered for the structural equation model based on the ranking operating scale, where operating capital is the value of short-term resources available for daily production activities. Hence, from the analysis results, it is evident that the model is acceptable as it satisfies the required fit indices. It can be observed from the analysis results that the financial professions have a significant direct impact on WCEF_1, WCEF_2, and WCEF_3 and most effectively influences the factor of operating efficiency, respectively.
8. The Path model for operating efficiency factors that influence the efficiency of working capital is drowned out by the perception of the financial professions. Results show the financial professions' perception of operating efficiency is very much dependent on the factors related to the efficiency of working capital management. Hence, the financial professions have a significant impact on the efficiency of working capital and operating efficiency.
9. It was also found that factors influencing working capital efficiencies, such as the

scale of operation, nature of business, dividend policy, seasonal factors, and accounts receivable, are not properly managed.

10. Operating efficiency, which directly and indirectly impacts the efficiency of working capital management, is the most sensitive and influential factor.

13.4 PATTERN OF WORKING CAPITAL FINANCING AND LIQUIDITY POSITION

1. From analysis results, the dominance of long-term funds as sources of working capital is greater in Maruti Suzuki India Ltd., Hyundai Motor India Ltd., Toyota Kirloskar Motor Pvt. Ltd., and Honda Cars India Ltd. At the same time, the rest of the companies have neutral or lower utilization rates.

2. The increasing dependence on the long-term sources of financing working capital in companies during the study period is more in Maruti Suzuki India Ltd., and other companies' results show they don't properly manage their current assets, like receivables and inventories.

3. To determine growth in net working capital in companies, the analysis results of the growth index show growth in net working capital over a while in all companies. The growth in network capital is the highest for Toyota Kirloskar Motor Pvt. Ltd., followed by selected Four-wheeler passenger car manufacturing companies in India.

4. It was found that Hyundai Motor India Ltd., Mahindra & Mahindra Ltd., Toyota Kirloskar Motor Pvt. Ltd., and Nissan Motor India Pvt. Ltd. have covered their current liabilities with their quick assets, as indicated by their positive quick net working capital.

5. The current ratio found that companies had not maintained the standard ratio of 2:1 during the study period. The average current ratios are less than 1 for five companies out of ten companies. The five companies that have more than 1 average current ratio are Hyundai Motor India Ltd., Mahindra & Mahindra Ltd., Toyota Kirloskar Motor Pvt. Ltd., Renault India Pvt. Ltd., and Fiat India Automobiles Pvt. Ltd., and the remaining companies' average current ratios are less than 1. The average current ratio is the highest for Toyota Kirloskar Motor Pvt. Ltd. at 1.47 times and the lowest for Honda Cars India Ltd. at 0.50 times. And the statistical result shows a significant difference in the current ratios between selected Four-wheeler passenger car

manufacturing companies and between years. ANOVA and F-test results find that the calculated value is greater than the critical f-value, which shows a significant difference in the current ratio of companies among and between years. The null hypothesis is rejected because each company's current ratio varies yearly, and the null hypothesis is rejected.

6. Quick ratio found that the companies had not maintained more than the standard ratio of 1:1, except for two companies, Hyundai Motor India Ltd. and Toyota Kirloskar Motor Pvt. Ltd., compared to the remaining companies to make quick settlement liabilities on a very short notice period. Statistical results show a significant difference in the liquidity ratios between companies and years. An ANOVA f-test result found that the differences in the liquid ratios between the companies are significant. In both scenarios, the calculated value is greater than the critical f-value, showing a significant difference in the liquidity ratio in companies among and between years. The null hypothesis is rejected because each company has a different yearly liquidity ratio.

7. Cash to current liabilities found that Toyota Kirloskar Motor Pvt. Ltd. has the highest cash to current liabilities ratio. In contrast, Nissan Motor India Pvt. Ltd. has the lowest, and the remaining companies have the highest. However, the cash to current liabilities ratio has fluctuated over a while for most companies.

8. It was found that the overall performance of all companies with the selected ratios was not satisfactory. The liquidity position of only two companies, Hyundai Motor India Ltd. and Toyota Kirloskar Motor Pvt. Ltd., can maintain a liquidity ratio of more than one, and the remaining companies have less than one. The average liquid ratio is the highest for Hyundai Motor India Ltd., and the lowest is for Honda Cars India Ltd.

13.5 IMPACT OF WORKING CAPITAL RATIOS ON PROFITABILITY

1. The current ratio (CR), quick ratio (QR), and working capital turnover ratio (WCTR) only showed negative correlations with profitability ratios. In contrast, the inventory turnover ratio (ITR), receivable turnover ratio (RTR), and cash turnover ratio (CTR) showed positive correlations with profitability ratios.

2. Statistical results show that out of six working capital component ratios, five ratios are significant at a 5-percentage level, except cash turnover ratios. Hence, working

capital ratios are significantly associated with profitability ratios.

3. It was found that WCTR, RTR, and CTR have a significant impact on profitability, while other working capital ratios, such as QR and ITR, have no significant impact.
4. It is also noticeable that the regression coefficient of QR is very high compared to other working capital ratios, but it is not significant.
5. The profitability position of the companies was not good, and they incurred losses during the study period. It also shows that companies' investment in current assets is very low, and the company has not matched the current standard ratio, i.e., 2:1, during any year of the study period from 2011-2022.

13.6 TRANSACTION DEMAND FUNCTIONS OF WORKING CAPITAL

1. Sales (S_{t-1}) effects on demand functions of working capital showed positive results with a high degree of strength and significance at a predetermined level of significance of 0.01 per cent with the mean square value (0.007).
2. Sales (S_t) effects on demand functions of working capital found that results show positive and less strong, compared to sales (S_{t-1}) but statistically significant at 0.07 level with f value (4.892), where null hypothesis rejected.
3. Sales (S_{t-1}) effect on demand functions of working capital components found that the sales fluctuations are less than the agreed amount in all cases. It varies from 1.054 for cash to -0.204 for net working capital. Thus, the scale is largest for cash (1.054), followed by inventory (-0.281), receivables (-0.296), gross working capital (-0.398), and net working capital (-0.204). Testing the hypothesis, sales (St) and sales (St-1) effects affect the demand functions of working capital components.
4. Sales (S_t) effect on demand functions of working capital components found that the result shows that transaction cash balances (-0.118) are negative and vary less than in proportion to changes in the volume of sales in the companies. Similarly, the transaction inventory balance (0.481) varies more than in proportion to changes in the volume of sales (S_t), receivable (0.593), gross working capital (0.816), and Net working capital (0.425). Testing the hypothesis results shows that accept remaining inventory variables are significant at 0.05 inventory entry at 0.10 level of significance.

14. Summary of Hypotheses Testing Results

Table 1.8
Summary of Hypotheses Testing Results

No.	Hypothesis	Objective	Statistical tools	Result
1	**H_1:** There is a relationship between gross working capital and sales in selected Four-wheeler companies in India.	To examine the size, composition, circulation, growth, and source of working capital management and its components.	Regression and t test	Alternative hypothesis is accepted, at 0.01 and 0.05 per cent level of significance.
2	**H_1:** There is a significant difference between the working capital trends of selected Four-wheeler automobile companies.	To assess and analyse the working capital trends.	least squares method & ANOVA: Two Factor	Alternative hypothesis is accepted, at 0.01 and 0.05 per cent level of significance.
3	**H_1**: There is a significant association between the factors related to the nature of business and scale of operations and the demographic factors of the respondents. **H_2:** There is a significant association between the factors related to the operating cycle and seasonal factors and the demographic factors of the respondents. **H_3:** There is a significant association between the factors related to the production cycle and credit allowed and the demographic factors of the respondents. **H_4:** There is a significant association between the factors related to credit availability and operating efficiency and the demographic factors of the respondents. **H_5:** There is a significant association between the factors related to inventory management and growth prospects and the demographic factors of the respondents. **H_6:** There is a significant association between the factors related to the level of competition and inflation and the demographic factors of the respondents. **H_7:** There is a significant association between the factors related to liquidity and account receivable and demographic factors of the respondents. **H_8:** There is a significant association between the factors related to account payable and dividend policy and the demographic factors of the respondents. **H_9:** There is a significant association between the factors related to plant efficiency and taxation policy and the demographic factors of the respondents. **H_{10}:** There is a significant difference in the perception related to the efficiency of working capital between various categories of financial professions. **H_{11}:** There is a significant impact of the financial professions on the efficiency of	To identify and assess the factors influencing the efficiency of working capital management.	Fisher's Exact Test value & Chi square test value Fisher's Exact Test value & Chi square test value Fisher's Exact Test value & Chi square test value Fisher's Exact Test value & Chi square test value Fisher's Exact Test value & Chi square test value Fisher's Exact Test value & Chi square test value Fisher's Exact Test value & Chi square test value Fisher's Exact Test value & Chi square test value Fisher's Exact Test value & Chi square test value Fisher's Exact Test value & Chi square test value	Accepted Sig at 0.01 level Accepted Sig at 0.01 level Accepted Sig at 0.01 level Accepted Sig at 0.01 level Accepted Sig at 0.01 level Accepted Sig at 0.01 level Accepted Sig at 0.01 level Accepted Sig at 0.01 level Accepted Sig at 0.01 level Accepted Sig at 0.01 & 0.05 level Accepted

	working capital and then on operating efficiency.		Fisher's Exact Test value & Chi square test value Analysis of Variance (ANOVA), Post Hoc Analysis Regression and Squared Multiple Correlations	Sig at 0.01 level
4	H_1: Pattern of working capital financing has influence (bearing) on working capital management. H_2: There is a significant difference in the current ratios between selected Four-wheeler automobile companies and between years. **H_3:** There is a significant difference in the quick ratios between selected Four-wheeler automobile companies and between years.	To study the pattern of working capital financing and assess the liquidity position.	Linear Regression and ANOVA: Two Factor	Alternative hypothesis is accepted, at 0.01 and 0.05 per cent level of significance.
5	**H_1**: Working capital ratios have a significant impact on profitability ratios. Sub-Hypothesis **H_1**: Quick ratio has a significant impact on the profitability ratio. **H_2:** Working capital turnover ratio has a significant impact on the profitability ratio. **H_3:** Inventory turnover ratio has a significant impact on the profitability ratio. **H_4:** Receivable turnover ratio has a significant impact on the profitability ratio. **H_5**: Cash turnover ratio has a significant impact on the profitability ratio.	To assess the impact of working capital ratios on profitability.	Pearson correction and linear regression	Alternative hypothesis is accepted, at 0.01 and 0.05 per cent level of significance. And Null hypothesis is accepted in case of quick ratio and inventory turnover ratio.
6	**H_1**: There is an effect Sales (S_{t-1}) on Demand Functions of Working Capital **H_2**: There is an Effect of Sales (S_t) on Demand Functions of Working Capital **H_3**: There is an effect of Sales (S_{t-1}) on-demand functions of working capital components. **H_4**: There is an effect of Sales (S_t) on-demand functions of working capital components.	To study the transaction demand functions of working capital and its various components based on changes in sales volume proportionately.	Regression, log Y = bo + bi log St-1] & [log Y = bo + bi log St]	Alternative hypothesis is accepted, at 0.01 and 0.05 per cent level of significance. And but components inventory and cash Significant at 0.10 level

15. SUGGESTIONS FOR THE STUDY

15.1 Suggestions based on the first objective

If it increases, the size of working capital determines the wellness of the whole industry's growth and companies. It may be said that the size of working capital, current assets (CA), current liabilities (CL), and net working capital (NWC) in companies has been quite large. To maintain the larger size of working capital based on the findings of the study, the following suggestions are made:

1. Companies should shorten their operating cycles. The longer the process, the higher the probability of non-payment and the greater the impact on your working capital.
2. Companies pinpoint their potential Net working capital (NWC) improvements by tracking the records of Managing receivables, payables, and Inventory.
3. Companies can reduce the inventory and increase inventory turnover, pay vendors on time and manage debtors effectively, convert to electronic payables and receivables, and receive adequate financing.
4. As a long-term strategy, it is advised to use long-term and short-term funds to meet permanent and temporary working capital requirements, respectively.
5. Cash management in companies can be streamlined by proper planning and control of cash. The firms must increasingly adopt objective rather than intuitive cash forecasting methods.
6. The management of working capital involves frequent decisions making is proposed that the company should set up a separate cell to keep an eye on the environmental conditions and economic trends.
7. The problem of surplus investment in receivables should be tackled. Companies need to adopt a weekly reporting system in respect of receivables.
8. Inventory accounts receivable and accounts payable are the three most critical roles for successful working capital management. Depending on the company and its operation, customer and supplier prepayments might be substantial to a firm's cash flow. Excess cash and non-operational elements can be excluded from the comparison for increased accuracy.
9. A higher cash turnover ratio indicates better management regarding cash and vice

versa, but too high a ratio may be due to an inadequate cash balance. An improvement in this ratio over the period usually indicates better cash management.

10. A high average collection period ratio could indicate that companies are having trouble with their cash flow.

11. The higher the sales, the greater the profits; it was suggested that companies use the same working capital to generate more sales, which means that companies can use the same funds repeatedly. Sales and gross working capital, their relationship in companies, is supposed to be positive and stronger by the efficient control of working capital management.

12. For better growth of working capital in companies, it suggested that companies need to boost their sales by keeping track of reviewing the volume of raw materials or finished goods and thinking, is there a way to lower the amount you purchase, change suppliers to get a better deal working with a different supplier, Work on better terms with your debtors and manage your payments.

13. As a long-term strategy, it is advised to use long-term and short-term funds to meet permanent and temporary working capital requirements, respectively.

14. Companies should adopt a moderate financing policy of working capital instant of an aggressive and conservative policy.

15. Companies need to improve their accounting receivable funding or invoice factoring to improve the working capital and grow the business with enough working capital.

15.2 Suggestions based on the second objective

1. Maruti Suzuki India Ltd. has a positive downward trend. This means a decreased current asset and a simultaneous increase in current liabilities. It suggested that companies need to control the excess cash investment to generate a higher rate of return, increasing the company's total value.

2. Hyundai Motor India Ltd**.,** Mahindra & Mahindra Ltd., Nissan Motor India Pvt. Ltd., and Fiat India Automobiles Pvt. Ltd. have **a** positive upward trend. This means an increase in current assets and a simultaneous decrease in current liabilities. It suggested that companies had good opportunities to invest cash to generate a higher

rate of return, thus increasing the company's total value.

3. Negative with a downward trend: Tata Motors Ltd., Honda Cars India Ltd., and Ford India Pvt. Ltd. have a negative trend. It means the company's current liabilities exceed its current assets, and its working capital is negative. It was suggested that companies improve their working capital positions to meet their immediate debts and stop generating cash quickly for smooth day-to-day operations.
4. Toyota Kirloskar Motor Pvt. Ltd. has a positive with a moderate trend. It means a company can balance its current assets and liabilities and not have to make further investments to generate profit.
5. Renault India Pvt. Ltd. has a positive and negative trend with a moderate trend. It means a company can balance its current assets and liabilities and has also made the investment to generate profit.

15.3 Suggestions based on the third objective

1. To improve the working capital position of companies, companies need to efficiently control all the elements of working capital (current assets and current liabilities).
2. Companies need to concentrate on the following factors: the scale of operation, nature of business, dividend policy, seasonal factors, and accounts receivable. It is supposed to be managed properly because it, directly and indirectly, has a greater impact on working capital efficiency.
3. The most sensitive and influential factor is operating efficiency, which directly and indirectly impacts the efficiency of working capital management. It suggests that companies need to check their routine base with a proper plan because the value of operating capital determines the ability of the business to sustain production operations and meet short-term financial obligations. It helps keep things running smoothly and can also help the company make more money and be more profitable.
4. The amount of working capital directly depends upon the length of the operating cycle. It suggests that if the operating cycle is long, more working capital is required, whereas the working capital requirement for companies with a short operating cycle is less.

5. Companies require a huge amount of working capital because they have to convert raw materials into finished goods, sell them on credit, and maintain the inventory of raw materials and finished goods.

6. Credit policy refers to the average period for the collection of sale proceeds. It suggests that if the company follows a liberal credit policy, it will require more working capital. In contrast, if a company follows a strict or short-term credit policy, it can manage with less working capital.

7. A firm with a high degree of operating efficiency requires a lower amount of working capital than a company with a low degree of efficiency, which requires more working capital. It is suggested that firms with a high degree of operating efficiency have low wastage and can manage with a low level of inventory

8. If there is an increase or rise in prices, then the price of raw materials and the cost of labour will rise. It will increase working capital requirements (inflation). It is suggested that if companies could also increase the price of their own goods, there would be fewer problems with working capital.

9. Finally, it suggested that all the important factors directly influence the efficiency of working capital management in companies. To have better working capital efficiency, companies should not think of the pursuit of working capital efficiency as a one-time project that ends when it's done. Instead, they should know that implementation starts a long-term process.

15.4 Suggestions based on the fourth objective

1. Short-term funds should mainly finance working capital funds for any concern. In cases of necessity, sometimes long-term sources may also be used. It suggested that companies must keep a good balance between long-term and short-term sources as far as possible, based on their costs.

2. Long-term debts are costlier than short-term debt, and it suggests that the company knows how to properly manage its current assets, like receivables and inventories, which helps the company less dependence on long-term sources of financing working capital.

3. It is suggested that most companies should focus on continuing to keep a ratio of 1:1 and 2:1 that maintains adequate leverage against liquidity risk, given the

variables in a particular sector of business, among other considerations.

4. Companies are more disposed to holding greater quick ratios when the business environment is unclear. It is suggested that if the cash flows were predictable and consistent, companies would like to keep the quick ratio at a lower level.

5. Companies must strike the right balance between the risk of liquidity posed by a low ratio and the risk of loss posed by a high ratio. Hence, it is suggested that a company's ratio could be lower if it has better credit terms with suppliers than its competitors. When analyzing the liquidity ratio over time, seasonal changes in some industries may cause the ratio to be traditionally higher or lower at certain times.

6. It suggested that companies need to have a very high-level ratio because it signals that the companies have more money than it needs and that cash is being invested properly. If there are lower ratios, company growth is sacrificed in favour of high liquidity.

7. Overall, it is suggested that if their current ratio is higher than it is better, and a good current ratio is between 1.2 and 2, the companies have twice more current assets than liabilities to cover their debts. Hence, a current ratio below 1 means the company doesn't have enough liquid assets to cover its short-term liabilities. A ratio of 1:1 indicates that current assets are equal to current liabilities and that the company is just able to cover all of its short-term obligations.

8. Based on the situation, it is suggested that the selected company go for the types of approach: aggressive, moderate, and conservative. This approach helps the company overcome financial challenges, secure loans, and plan for the financial future.

15.5 Suggestions based on the fifth objective

1. The result suggests that companies should maintain an optimum investment in their current assets to easily improve their liquidity position and ability to pay their current obligations.

2. The ITR and RTR of the companies are found to be high, which suggests that the company is following a strict credit policy, which could be one of the reasons for the delay in production and low sales and hence low profitability.

3. CTR and WCTR are found to be good figures, but when we look at the size of

current assets in total assets, the figure of liquidity ratios such as QR cannot be considered good. It suggests that working capital management is linked with profitability, which indicates that aggressive working capital investment and financial policies drive higher profitability.

4. The correlation analysis of the study shows that the WCTR, RTR, and CTR of the independent variables were positively correlated with profitability, and the remaining QR and ITR were neutral. It is suggested that if the financial managers keep an eye on the WCTR, RTR, and CTR, it will lead to profitability. At the same time, it is also recommended that companies always maintain a sound QR and ITR to maintain the liquidity ratio.

5. Finally, it is further suggested that financial managers of companies can create value for their shareholders by reducing the number of days accounts receivable, increasing the number of days accounts payable, and reducing inventories to a reasonable minimum.

15.6 Suggestions based on the Sixth objective

1. It suggested that companies keep a certain amount of cash to support sales. Operating efficiency is a sensitive factor affecting the demand for working capital. The sales working capital ratio should be maintained with an aggressive approach.

2. Sales (S_{t-1}) effects on demand functions of working capital show positive results with a high degree of effects. It is suggested that positive results with a high degree of effects mean that sales indicate the amount of revenue that must be used to cover operating expenditures and short-term debt commitments. Hence, companies' financial managers need to maintain their operating expenditures to meet the data requirements of day-to-day operations.

3. Whereas it was found that sales (S_t) on demand for working capital were observed to be positive and less strong. Hence, it suggests that the extent to which an increase in revenue will affect a company's working capital depends on how efficiently your business operates.

4. It also suggested that components such as cash and inventory significantly impact. As a result, the company needs to improve inventory control and cash investment with a moderate policy rather than an aggressive and conservative one.

15.7 SUGGESTION TO FOUR-WHEELER PASSENGER CAR MANUFACTURING COMPANIES

Based on the prominent findings of this study, specific broad suggestions that may be useful to strengthen the proper working capital management for the four-wheeler companies in India and its industry are presented below. -

1. Working capital rotation should be increased in companies so the requirement would be less controlled. The companies should control the collection efficiency for lower working capital requirements. It helps the company fulfil its requirement for working capital.
2. If the companies' current assets increase yearly, it is suggested that they should be controlled by stock level and receivables and improve control over their credit policy.
3. If current assets are increasing at a very high rate among the companies, it is due to a relaxed credit policy. It is suggested that companies reduce their collection period and maintain stock levels too.
4. If the current asset trend of companies shows both an increase and a decrease, it means fluctuations are not too high, so it can be managed by control over stock and receivables.
5. Suppose current liabilities levels in companies are increasing every year. In that case, it is in favour of working capital management. Still, a company should take care that the increase in current liabilities may not be excessive, as that can harm the company's image through non-payment or delay in payment.
6. Suppose inventory levels were to increase every year in companies. In that case, it is not in favour of the company, so the company should control inventory levels with the help of an EOQ system.
7. Suppose inventory levels decreased yearly in companies, which is favorable for the company. In that case, the company should maintain the reducing trend because the lower the inventory level, the lower the cost of inventory maintenance.

8. If the size of the inventory companies fluctuates between the highest and the lowest level, it is not favorable for the company. The company should work to improve inventory management.
9. If companies control cash management, but when it is increasing, it is suggested that a company should maintain a perfect cash balance and a fixed and optimum level of cash balance.
10. If receivable management is fluctuating at a very high percentage in companies, it is advised that companies should improve their control over the fluctuation in the balance of receivables.
11. If companies' current liabilities to working capital are very high, it is very good for them because it is a source of short-term finance.
12. Suppose current liabilities have a very low percentage of the working capital in companies. It suggested getting more credit from their suppliers.
13. If uses and sources of funds show that the requirement for working capital in companies is increasing yearly, it requires immediate control over working capital requirements.
14. The profitability trend of companies experienced a strong tendency to decline over the study period. Therefore, it is suggested that all the companies undertake cost control measures further so that their increased profit margin may enhance the earning profit ratio.
15. Suppose companies' operating expenses rise in tandem with the increase in sales volume. In that case, the companies should introduce a system of internal control by which this can keep a check on operating expenses.
16. To increase the profitability of the companies, the management should try to control the cost of goods sold and operating expenses, increase production to get economies of large-scale production, reduce factory overheads, improve sales, or adopt cost reduction techniques in their companies.
17. To improve the efficiency of the companies, the management should try to maintain optimal working capital, and excessive capital should be invested on time in various securities or repay the advances and short-term loans. They should also try to maintain a balanced credit and collection policy to

minimize bad debts.

18. To improve the liquidity position of companies, management should try to implement a cashless system or maintain a standard cash balance to meet short-term obligations.
19. To improve the solvency position of companies, the management should try to maintain a balance between debt and equity to avoid financial risk or disregard the risk of arranging finance regularly.
20. To improve companies' market position**,** management should provide a regular dividend to shareholders**.**
21. The management information system (MIS) should be made more effective so that the implementation of top management decisions might be more effective and quicker at all levels so that the profitability of the companies might be strengthened by taking necessary action in time.
22. Companies should manage plants by arranging funds at a concessional rate of interest or by bringing out an initial public issue to minimize wastage and enhance the profitability of the companies.

16. CONCLUSION OF THE STUDY

To conclude the first objective, it may be said that adopting the above measures will undoubtedly help the companies improve their overall performance in managing working capital in terms of size, composition, circulation, and growth with proper financing patterns. Many funds now invested in inventory and receivables can be released for alternative uses. Further, based on the findings and suggestions, it concludes that the higher the ratio, the better state your working capital is in. If the ratio in companies is lower than 1:1, then the companies' working capital will be negative. In this case, companies worry about the action they will take to bring it into a positive ratio. While some big businesses can get away with a negative working capital ratio, start-ups and small or medium-sized businesses need to try and keep it positive.

To conclude the second objective, it may be said that companies improve their working capital trends by improving working capital management. Working capital trend finding shows upward, and positive trends help to determine the company's ability to pay for short-term obligations.

To conclude the third objective, it may be said that companies have a high level of working capital. It indicates a well-managed company with greater potential for growth and improved liquidity, operating efficiency, and profits. It is also critical to ensure that much-needed funds for expansion are not involved in the company's operating capital. Working capital management is critical in ensuring that a company has enough cash to run its operations while not restricting its ability to expand its activities. Companies can maintain adequate cash flow and meet short-term commitments in the months ahead by focusing on inventory payables, receivables, and other factors that affect working capital efficiency.

To conclude the fourth objective, it may be said that the liquidity position of only two companies, such as Hyundai Motor India Ltd. and Toyota Kirloskar Motor Pvt. Ltd., can maintain a liquidity ratio of more than one, and the remaining chosen companies have less than one. The average liquid ratio is the greatest for Hyundai Motor India Ltd., and the lowest is for Honda Cars India Ltd. The remaining companies can maintain less than 1. Hence, it is concluded that a good current ratio is between 1.2 and 2, which means that the business has two times more current assets than liabilities to cover its debts. It helps the company overcome financial challenges, secure loans, and plan for its financial future.

To conclude the fifth objective, it may be said that companies trigger a working capital ratio impact on profitability. If the companies manage their working capital more efficiently, management of working capital means the management of current assets and current liabilities. If Four-wheeler passenger car manufacturing companies could efficiently manage their CR, QR, CTR, WCTR, and ITR with a moderate approach, it would increase their profitability.

To conclude the sixth objective, it may be said that companies estimate how $\mathbf{S_{t-1}}$ **or** $\mathbf{S_t}$ affects the demands of working capital. The demand for working capital for transactions, the demand for working capital as a precaution, and the demand for speculative purposes. Hence, transaction demand for working capital in companies is the amount of working capital required for current transactions of companies. It is the quantity of working capital that all manufacturing companies desire to keep on hand to finance their forthcoming expenditure.

17. SCOPE FOR FURTHER RESEARCH

To deepen the concept of working Capital Management in four-wheeler automobile companies in India, the researcher recommends conducting more research and scientific studies dealing with:

1. The study can be widened to compare several four-wheeler passenger car Manufacturing companies on the same or additional variables.

2. Further research can be done segment-wise in the automobile industry to examine firms' financial strength in particular segments of the auto industry.

3. A separate study can be taken to the micro level for efficient working capital management.

4. The influence of interest rate risk, business risk, economic risk, foreign exchange risk, and cut-throat competition risk on working capital management can be taken for further research.

5. A separate study can be conducted to examine the internal and external factors influencing the efficiency level of working capital management.

6. A separate study can be conducted to assess the relative importance of long-term and short-term debt in financing working capital.

7. A comparative study on the impact of working capital ratios on profitability and working capital trends in four-wheeler automobile companies.

8. An exploratory study on liquidity management to analyze the ample cash available to pay current obligations to reduce the risk in the automobile industry.

9. A separate study can be conducted to examine each component of working capital management to analyze the day-to-day operational performance of manufacturing companies.

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Confirmation

I hereby declare that this synopsis entitled “A comprehensive study of working capital management in selected four-wheeler automobile companies in India” is carried out by me under the guidance of Dr. Parameshwara, Associate professor & Chairman, department of studies in commerce, Mangalore university, Mangalagangothri -574199

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ABDUL RAHMAN

Date……

It is certified that this synopsis entitled “A comprehensive study of working capital management in selected four-wheeler automobile companies in India” is a bonafide record of work done by Mr. Abdul Rahman, under my guidance and supervision.

Research Guide

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Date……